

CONTRACTOR : ABB CONTRACTING COMPANY

CLIENT : SAUDI ELECTRICITY COMPANY, CENTRAL TRANSMISSION AREA

PROJECT : CONSTRUCTION OF 380/132/13.8kV BSP # 9020 KING ABDULLAH FINANCIAL CENTER

SUBSTATION : S/S 9020

CONTRACT NO. : 11033009/00

TITLE : PROTECTION LOGIC DIAGRAM-132kV

Saudi Electricity Company CTA Projects Department	
<input type="checkbox"/> Approved	SIGN 
<input checked="" type="checkbox"/> Approved with Comments	SYED ZAFULLA MALGIMANI 31 - 07 - 2012
<input type="checkbox"/> Disapproved	12 / 91226 / 12021001 23-07-2012
SEC Ref & Date	



ABB PROJECT NO.	ABB SHT NO:				
S-12926	<table><tr><th>SHEET</th><th>CONT.</th></tr><tr><td>000</td><td>001</td></tr></table>	SHEET	CONT.	000	001
SHEET	CONT.				
000	001				

AS-BUILT BY _____ DATE _____						COVER SHEET		الشركة السعودية للكهرباء Saudi Electricity Company				SHEET NO.
07	12 25	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	DRAWN BY <u>TSR</u> CHECKED BY <u>NSR</u>		PROTECTION LOGIC SINGLE LINE DIAGRAM		JOB ORDER NO.		01
06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED <u>06/10/2010</u> DATE COMP _____		S/S 9020		INDEX		of 54
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	DATE STARTED <u>06/10/2010</u> DATE COMP _____		CONTRACT NO.11033009/00		PLANT NO.		REV. NO.
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.	OPRG. DEPT. <u>CTPD</u>	ENG. DEPT. <u>AUT-PSNM</u>	S/ S 9020		DRAWING NUMBER		07
						RIYADH		SAUDI ARABIA		N/A		

CONTENTS	SHEET	REV.	REMARKS
COVER SHEET	000	07	COMMON
LIST OF CONTENTS	001	07	COMMON
LIST OF CONTENTS	002	07	COMMON
132kV UG FEEDER 8192A AC CIRCUIT	003	07	TYPICAL
132kV UG FEEDER 8192A DC LOGIC CIRCUIT	004	07	TYPICAL
132/13.8kV GT-1 AC CIRCUIT	005	07	TYPICAL
132/13.8kV GT-1 DC LOGIC CIRCUIT	006	07	TYPICAL
132kV SIDE OF 502 MVA SGT-1 AC CIRCUIT	007	07	TYPICAL
132kV SIDE OF 502 MVA SGT-1 DC LOGIC CIRCUIT	008	07	TYPICAL
132kV SHUNT REACTOR-1 AC CIRCUIT	009	07	TYPICAL
132kV SHUNT REACTOR-1 DC LOGIC CIRCUIT	010	07	TYPICAL
132kV BUS COUPLER-1 AC CIRCUIT-130	011	07	TYPICAL
132kV BUS COUPLER-1 DC LOGIC CIRCUIT-130	012	07	TYPICAL
132kV BUS SECTION-1 AC CIRCUIT-120	013	07	TYPICAL
132kV BUS SECTION-1 DC LOGIC CIRCUIT-120	014	07	TYPICAL
132kV SPARE D21 150 MVAR CAPACITOR BFR AC CIRCUIT	015	07	TYPICAL
132kV SPARE D21 150 MVAR CAPACITOR BFR DC LOGIC CIRCUIT	016	07	TYPICAL
132kV SPARE D19 UGC BFR AC CIRCUIT	016A	07	TYPICAL
132kV SPARE D19 UGC BFR DC LOGIC CIRCUIT	016B	07	TYPICAL
132kV BUS COUPLER-2 AC CIRCUIT-230	017	07	TO BE SUBMITTED LATER
132kV BUS COUPLER-2 DC LOGIC CIRCUIT-130	018	07	TO BE SUBMITTED LATER
132kV UG FEEDER 8192B AC CIRCUIT	019	07	TO BE SUBMITTED LATER

CONTENTS	SHEET	REV.	REMARKS
132kV UG FEEDER 8192B DC LOGIC CIRCUIT	020	07	TO BE SUBMITTED LATER
132kV UG FEEDER 8191A AC CIRCUIT	021	07	TO BE SUBMITTED LATER
132kV UG FEEDER 8191A DC LOGIC CIRCUIT	022	07	TO BE SUBMITTED LATER
132kV UG FEEDER 8191B AC CIRCUIT	023	07	TO BE SUBMITTED LATER
132kV UG FEEDER 8191B DC LOGIC CIRCUIT	024	07	TO BE SUBMITTED LATER
132/13.8kV TRANSFORMER GT-2 AC CIRCUIT	025	07	TO BE SUBMITTED LATER
132/13.8kV TRANSFORMER GT-2 DC LOGIC CIRCUIT	026	07	TO BE SUBMITTED LATER
132/13.8kV TRANSFORMER GT-3 AC CIRCUIT	027	07	TO BE SUBMITTED LATER
132/13.8kV TRANSFORMER GT-3 DC LOGIC CIRCUIT	028	07	TO BE SUBMITTED LATER
132/13.8kV SGT-2 AC CIRCUIT	029	07	TO BE SUBMITTED LATER
132/13.8kV SGT-2 DC LOGIC CIRCUIT	030	07	TO BE SUBMITTED LATER
132/13.8kV SGT-3 AC CIRCUIT	031	07	TO BE SUBMITTED LATER
132/13.8kV SGT-3 DC LOGIC CIRCUIT	032	07	TO BE SUBMITTED LATER
132kV SHUNT REACTOR-2 AC CIRCUIT	033	07	TO BE SUBMITTED LATER
132kV SHUNT REACTOR-2 DC LOGIC CIRCUIT	034	07	TO BE SUBMITTED LATER
132kV SPARE D17 UGC BFR AC CIRCUIT	035	07	TO BE SUBMITTED LATER
132kV SPARE D17 UGC BFR DC LOGIC CIRCUIT	036	07	TO BE SUBMITTED LATER
132kV SPARE D15 UGC BFR AC CIRCUIT	037	07	TO BE SUBMITTED LATER
132kV SPARE D15 UGC BFR DC LOGIC CIRCUIT	038	07	TO BE SUBMITTED LATER
132kV SPARE D11 UGC BFR AC CIRCUIT	039	07	TO BE SUBMITTED LATER
132kV SPARE D11 UGC BFR DC LOGIC CIRCUIT	040	07	TO BE SUBMITTED LATER

AS-BUILT BY _____ DATE _____									
07	12	21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	DRAWN BY	TSR	CHECKED BY
06	12	21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED	06/10/2010	DATE COMP
05	12	16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	OPRG. DEPT.	CTPD	ENG. DEPT.
REV. NO.	DATE	DESCRIPTION		CHKD.	CERT.	APPD.	AUT-PSNM		

LIST OF CONTENTS	
PROTECTION LOGIC SINGLE LINE DIAGRAM	
S/S 9020	CONTRACT NO.11033009/00
RIYADH	SAUDI ARABIA

الشركة السعودية للكهرباء Saudi Electricity Company		ABB PROJECT NO. S-12926		ABB SHT NO. 001	
JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
N/A	P	C292	CD-176662	02 of 54	07

CONTENTS	SHEET	REV.	REMARKS
132kV UGF 8191A CLOSING LOGIC	063	07	TO BE SUBMITTED LATER
132 kV UGF 8191B CLOSING LOGIC	064	07	TO BE SUBMITTED LATER
132kV BUS COUPLER-1 CLOSING LOGIC	065	07	TYPICAL
132kV BUS COUPLER-2 CLOSING LOGIC	066	07	TO BE SUBMITTED LATER
132kV BUS SECTION-1 CLOSING LOGIC	067	07	TYPICAL
132kV BUS SECTION-2 CLOSING LOGIC	068	07	TO BE SUBMITTED LATER
132kV SIDE OF SGT-1 CLOSING LOGIC	069	07	TYPICAL
132kV SIDE OF SGT-2 CLOSING LOGIC	070	07	TO BE SUBMITTED LATER
132kV SIDE OF SGT-3 CLOSING LOGIC	071	07	TO BE SUBMITTED LATER
SPARE	072	07	
SPARE	073	07	
SPARE	074	07	
SPARE	075	07	
SPARE	076	07	
SPARE	077	07	
SPARE	078	07	
SPARE	079	07	
SPARE	080	07	
132kV PROTECTION DEVICES NOMENCLATURES	081	07	COMMON
132kV PROTECTION DEVICES NOMENCLATURES	082	07	COMMON
132kV PROTECTION DEVICES NOMENCLATURES	083	07	COMMON
SCHEDULE OF MAIN PROTECTIVE RELAYS	084	07	COMMON
SPARE	085	07	

Saudi Electricity Company
CTA Projects Department

☐ Approved
☒ Approved with Comments
☐ Disapproved

SIGN TSI
SYED ZAFRULLA MALGIMANI
NAME 31-07-2012
DATE 12 / 91226 / 12021001
DATE 23-07-2012
SEC. Ref & Date

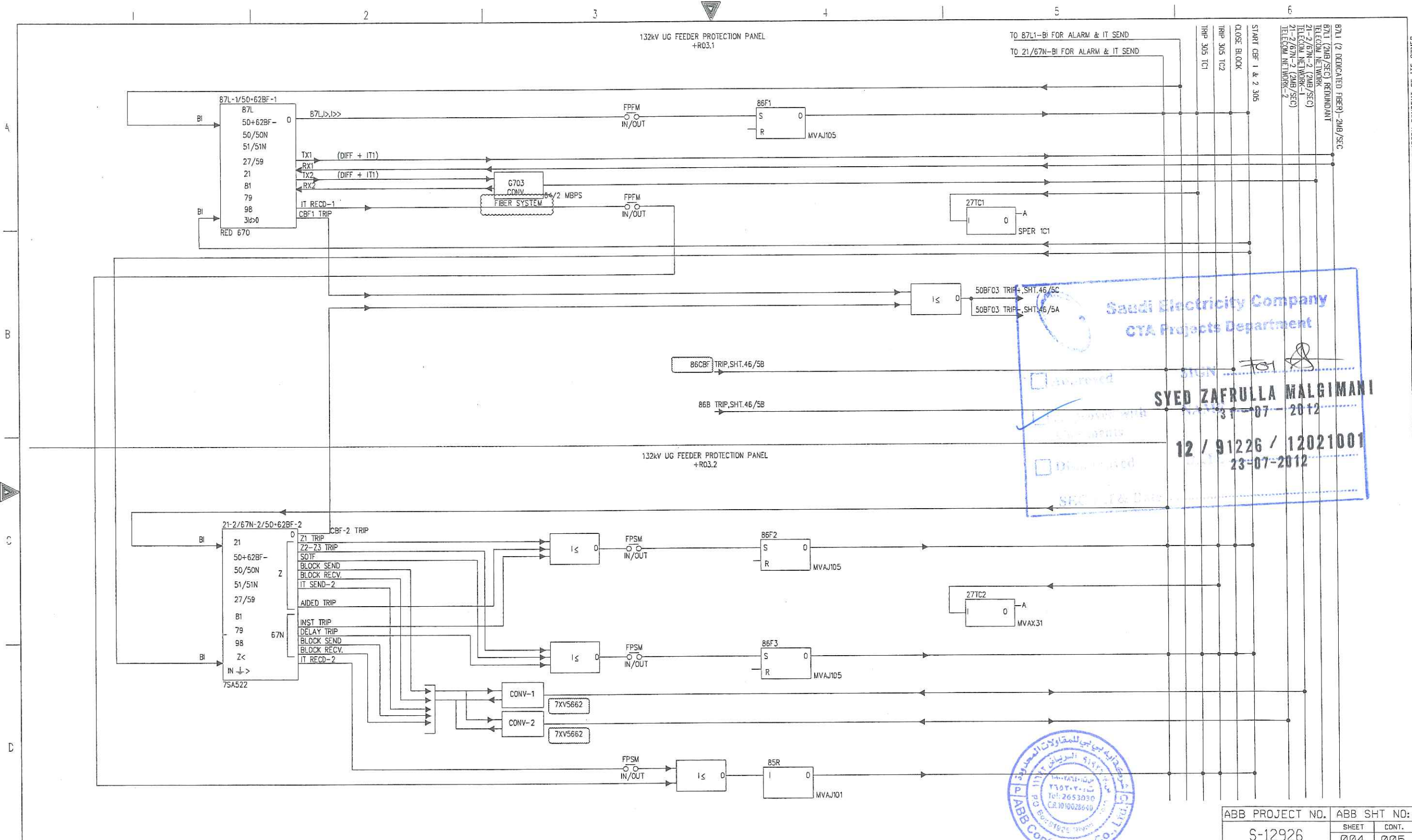


ABB PROJECT NO.	ABB SHT NO:
S-12926	002 003

AS-BUILT	BY	DATE							
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06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED	06/10/2010	DATE COMP	
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	OPRG. DEPT.	CTPD	ENG. DEPT.	AUT-PSNM
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.				

LIST OF CONTENTS
PROTECTION LOGIC SINGLE LINE DIAGRAM
S/S 9020 CONTRACT NO.11033009/00
RIYADH SAUDI ARABIA

الشركة السعودية للكهرباء Saudi Electricity Company	JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
	N/A	P	C292	CD-176662	07

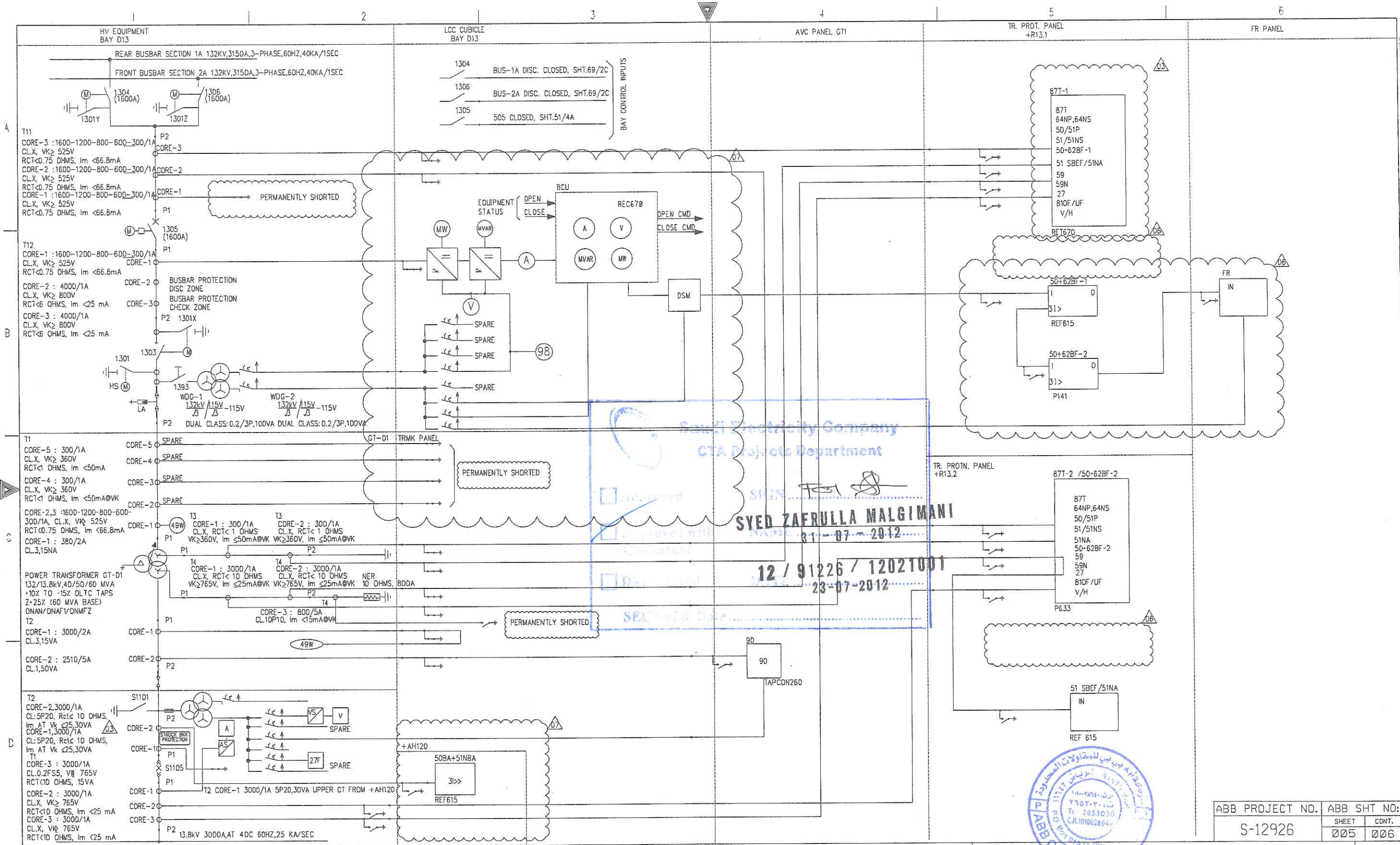


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SYED ZAFRULLA MALGIMANI
31-07-2012
12 / 91226 / 12021001
23-07-2012

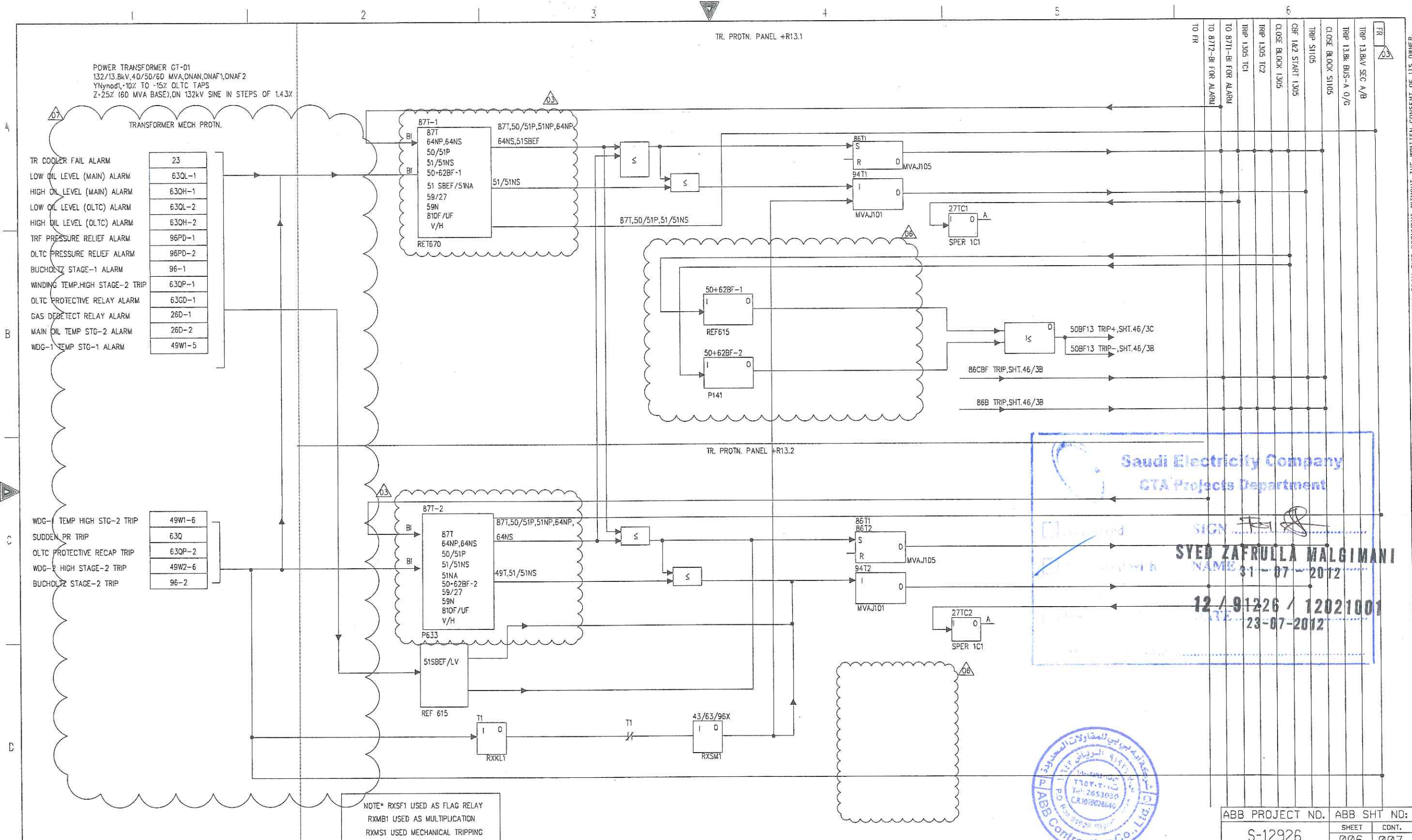


AS-BUILT BY _____ DATE _____			132kV UGF 8192-A PROTN. PANEL DC LOGIC CIRCUIT			الشركة السعودية للكهرباء			ABB PROJECT NO. S-12926	ABB SHT NO. 004	005
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06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	S/S 9020 CONTRACT NO.11033009/00			REV. NO. 07		
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	RIYADH SAUDI ARABIA			JOB ORDER NO. N/A		
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSNM			INDEX P		
									PLANT NO. C292		
									DRAWING NUMBER CD-176662		
									SEC-D (2004/10)		
									DMS VECTOR SECD00		



AS-BUILT BY _____ DATE _____			132/13.8kV GT-1 PROTN. AC CIRCUIT			الشركة السعودية للكهرباء			ABB PROJECT NO.	ABB SHT NO:	SHEET NO. 08 of 54
07	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	Saudi Electricity Company			S-12926	005	
06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	PROTECTION LOGIC SINGLE LINE DIAGRAM			JOB ORDER NO.	INDEX	PLANT NO.
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	S/S 9020 CONTRACT NO.11033009/00			N/A	P	C292
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSNM			DRAWING NUMBER		
						RIYADH SAUDI ARABIA			CD-176662		
						SAUDI ARABIA			REV. NO. 07		


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CTA Projects Department

SYED ZAFRULLA MALGIMANI
NAME 31-07-2012
DATE 12/91226 / 12021001
23-07-2012

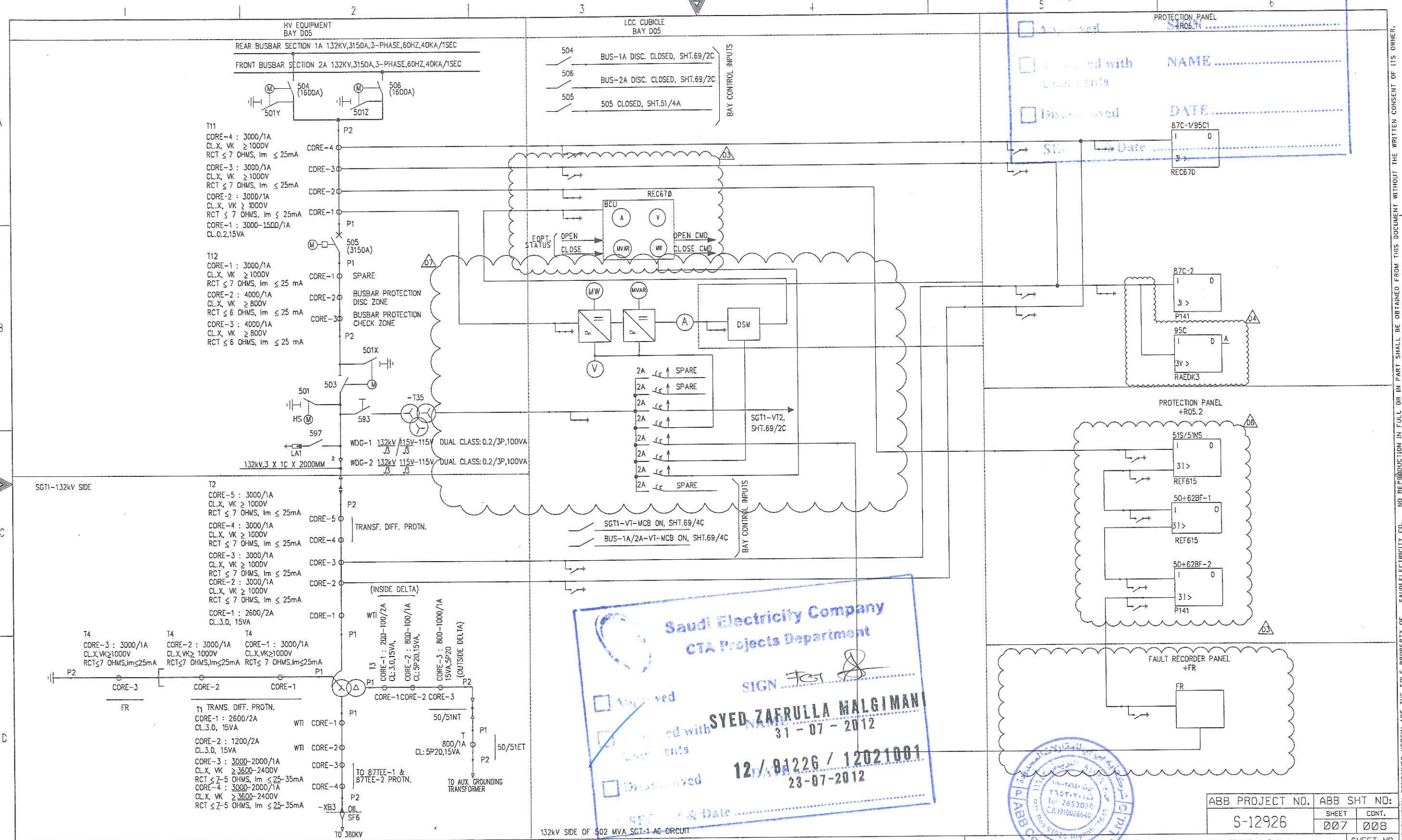


AS-BUILT BY _____ DATE _____										132/13.8kV GT-1 PROTN. DC LOGIC CIRCUIT										<div><div>الشركة السعودية للكهرباء Saudi Electricity Company</div></div>										SHEET NO. 09 of 54																													
07	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	DRAWN BY <u>TSR</u> CHECKED BY <u>NSR</u>					PROTECTION LOGIC SINGLE LINE DIAGRAM										JOB ORDER NO.		INDEX	PLANT NO.	DRAWING NUMBER		REV. NO.																																
06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED <u>06/10/2010</u> DATE COMP _____					S/S 9020 CONTRACT NO.11033009/00										N/A		P	C292	CD- 176662		07																																
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSNM</u>					RIYADH SAUDI ARABIA																																																
REV. NO.		DATE		DESCRIPTION			CHKD.	CERT.	APPD.																																																		
1										2										3										4										5										SEC-D (2004/10)									
																																																		DMS VECTOR SEC000									


Saudi Electricity Company
 CTA Projects Department

APPROVED _____
 CHECKED WITH _____
 DISAPPROVED _____

NAME _____
 DATE _____
 87C-1/95C1
 REC670

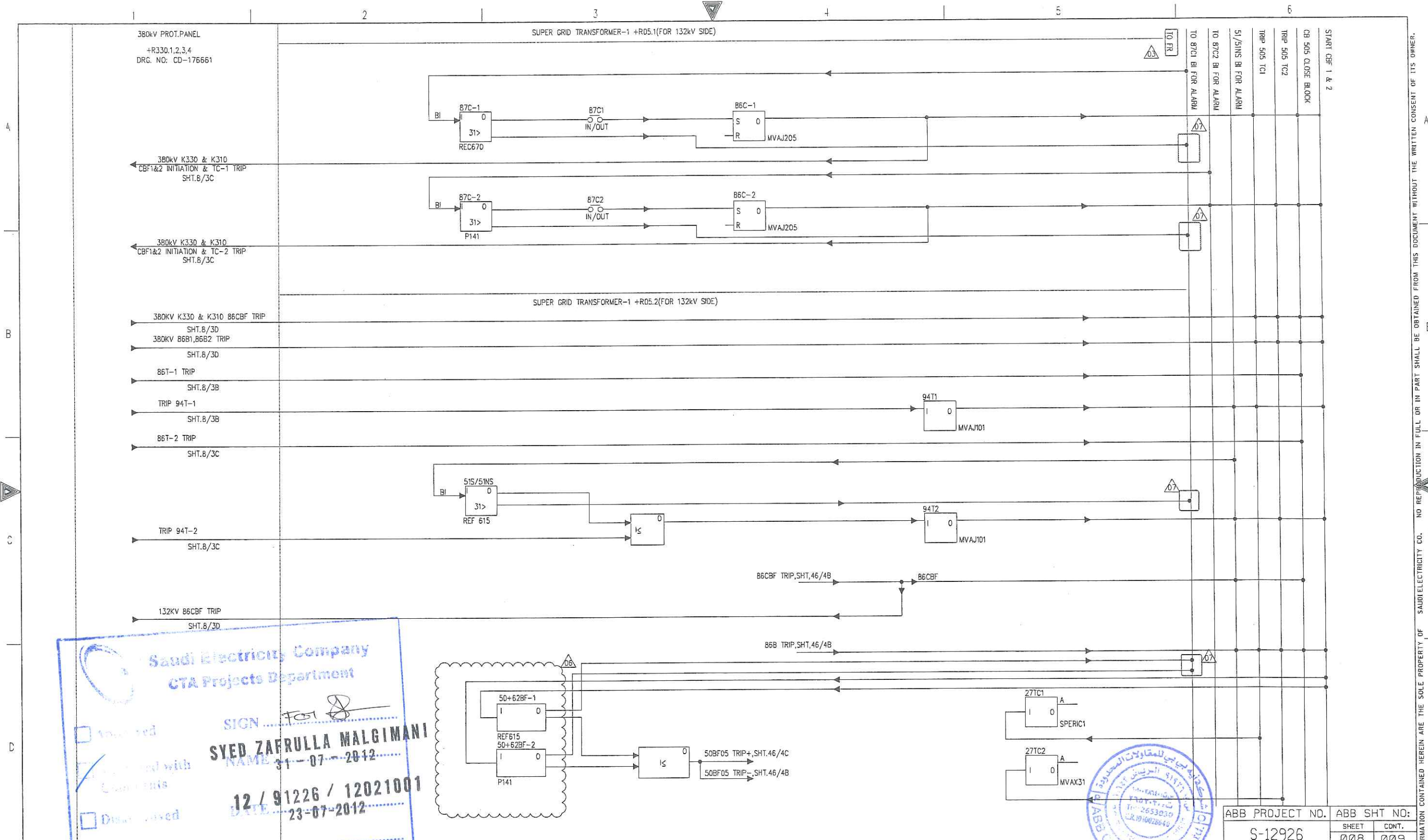



Saudi Electricity Company
 CTA Projects Department

APPROVED _____
 CHECKED WITH _____
 DISAPPROVED _____

NAME **SYED ZAFRULLA MALGIMAN**
 DATE **31-07-2012**
12/01226 / 12021001
23-07-2012

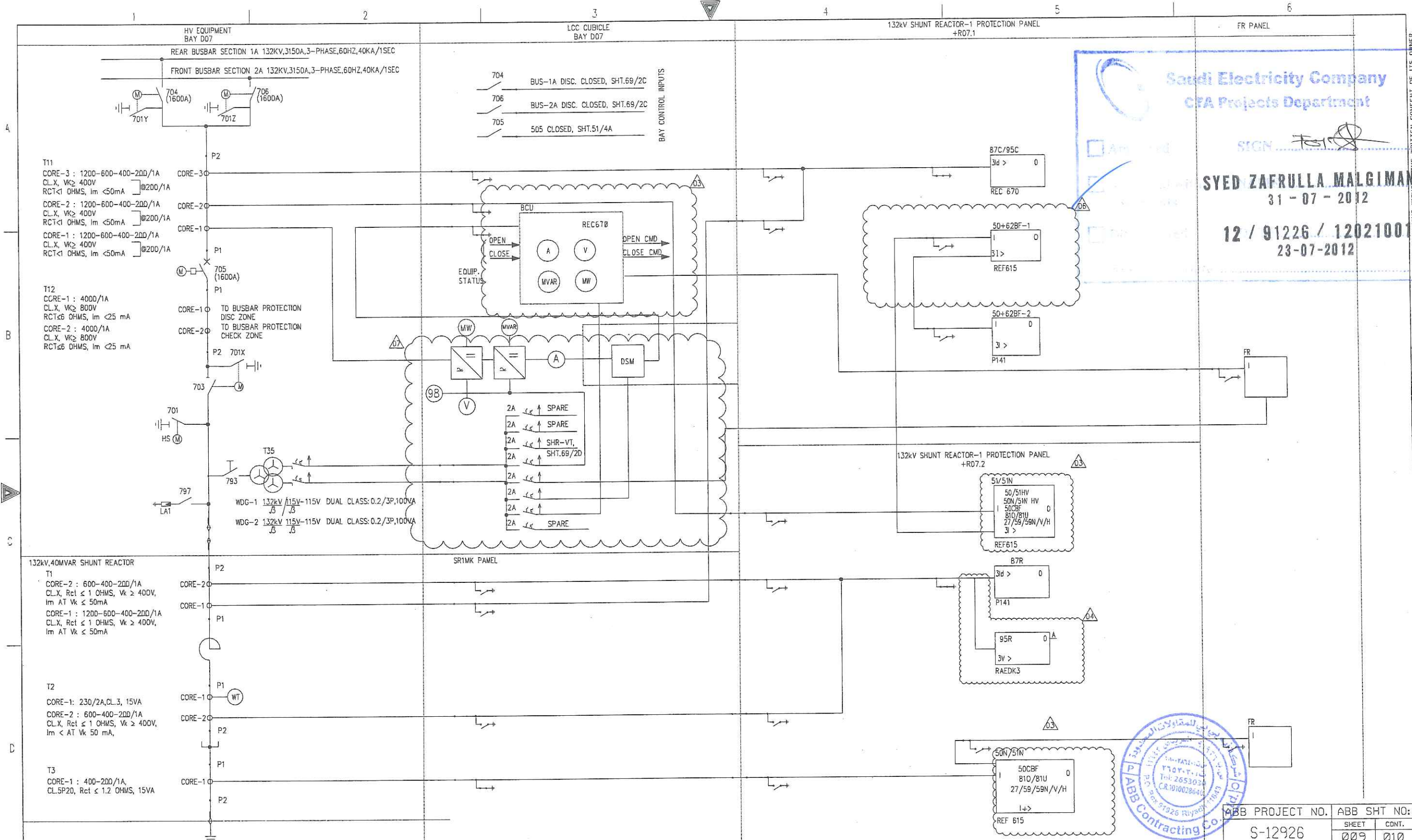
AS-BUILT BY _____ DATE _____										132kV SIDE OF 502 MVA SGT-1 AC CIRCUIT										الشركة السعودية للكهرباء									
PROTECTION LOGIC SINGLE LINE DIAGRAM										Saudi Electricity Company										SHEET NO. 10 of 54									
S/S 9020										CONTRACT NO.11033009/00										JOB ORDER NO. N/A									
RIYADH										SAUDI ARABIA										INDEX P									
CD-176662										DRAWING NUMBER										REV. NO. 07									
SEC-D (2004/10)										DMS										VECTOR									



Saudi Electricity Company
CTA Projects Department

SIGN: For
NAME: SYED ZAFRULLA MALGIMANI
DATE: 31-07-2012
12 / 91226 / 12021001
23-07-2012

AS-BUILT BY _____ DATE _____			132kV SIDE OF 502MVA SGT-1 DC LOGIC CIRCUIT			الشركة السعودية للكهرباء			ABB PROJECT NO. S-12926		ABB SHT NO. 008		SHEET NO. 11	
07 12 21 RVD AS PER SEC REF LTR # 30502101 NS NK AK			DRAWN BY TSR CHECKED BY NSR			Saudia Electricity Company			SHEET 008		CONT. 009		of 54	
06 12 21 RVD AS PER SEC REF LETTER # 91081 NS NK AK			DATE STARTED 06/10/2010 DATE COMP _____			JOB ORDER NO. N/A			INDEX P		PLANT NO. C292		DRAWING NUMBER CD-176662	
05 12 16 RVD AS PER SEC REF LETTER # 90994 NS NK AK			OPRG. DEPT. CTPD ENG. DEPT. AUT-PSNM			CONTRACT NO. 11033009/00			REV. NO. 07		SAUDI ARABIA		REV. NO. 07	
REV. NO. _____			DESCRIPTION _____			RIYADH			SEC-D (2004/10)		DMS VECTOR		SEC000	



Saudi Electricity Company
CFA Projects Department

SYED ZAFRULLA MALGIMALI
31-07-2012

12 / 91226 / 12021001
23-07-2012



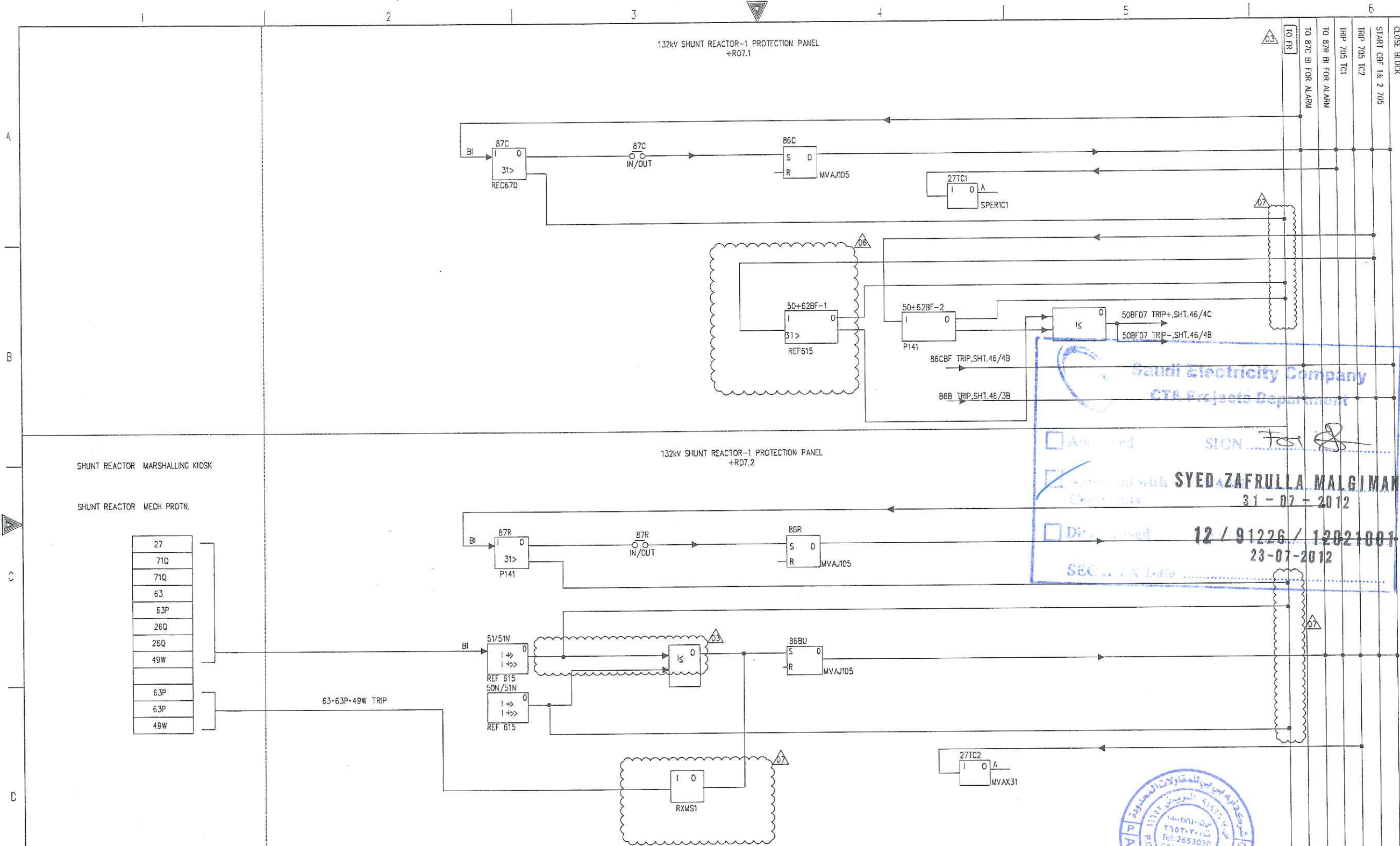
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06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK

132kV SHUNT REACTOR PROTN. PANEL AC CIRCUIT
PROTECTION LOGIC SINGLE LINE DIAGRAM

S/S 9020 CONTRACT NO.11033009/00
RIYADH SAUDI ARABIA

JOB ORDER NO.		INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
N/A		P	C292	CD-176662	07

ABB PROJECT NO.	ABB SHT NO:
S-12926	009 010



Saudi Electricity Company
 CTA Projects Department
 SIGN: *[Signature]*
 SYED AZAFRULLA MALGIMANI
 31-07-2012
 12 / 91226 / 12021001
 23-07-2012
 SEC. 1 & Date



ABB PROJECT NO.	ABB SHT NO:
S-12926	SHEET 010 CONT. 011

AS-BUILT	BY _____	DATE _____
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06	12 21	RVD AS PER SEC REF LETTER # 91081 NS NK AK
05	12 16	RVD AS PER SEC REF LETTER # 90994 NS NK AK
REV. NO.	DATE	DESCRIPTION
		CHKD. CERT. APPD.

132kV SHUNT REACTOR -1 DC LOGIC CKT.
PROTECTION LOGIC SINGLE LINE DIAGRAM
S/S 9020 CONTRACT NO.11033009/00
RIYADH SAUDI ARABIA

الشركة السعودية للكهرباء Saudi Electricity Company		SHEET NO. 13 of 54
JOB ORDER NO.	INDEX	PLANT NO.
N/A	P	C292
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CD-176662		07

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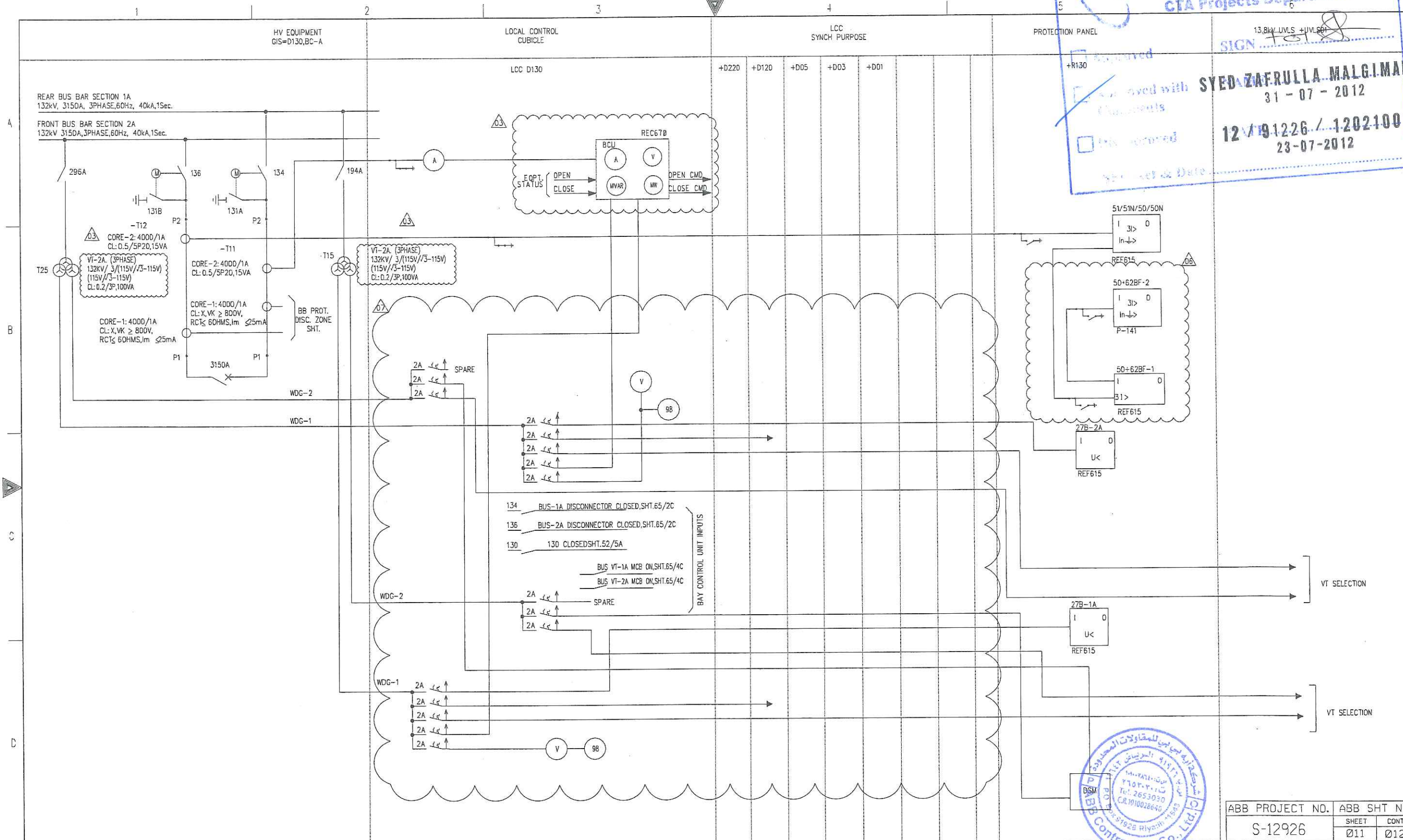
13.8kV U.V.S. + U.V.S.P.

SIGN: *[Signature]*

SYED ZAFRULLA MALGIMAN
31-07-2012

12/191226 / 12021001
23-07-2012

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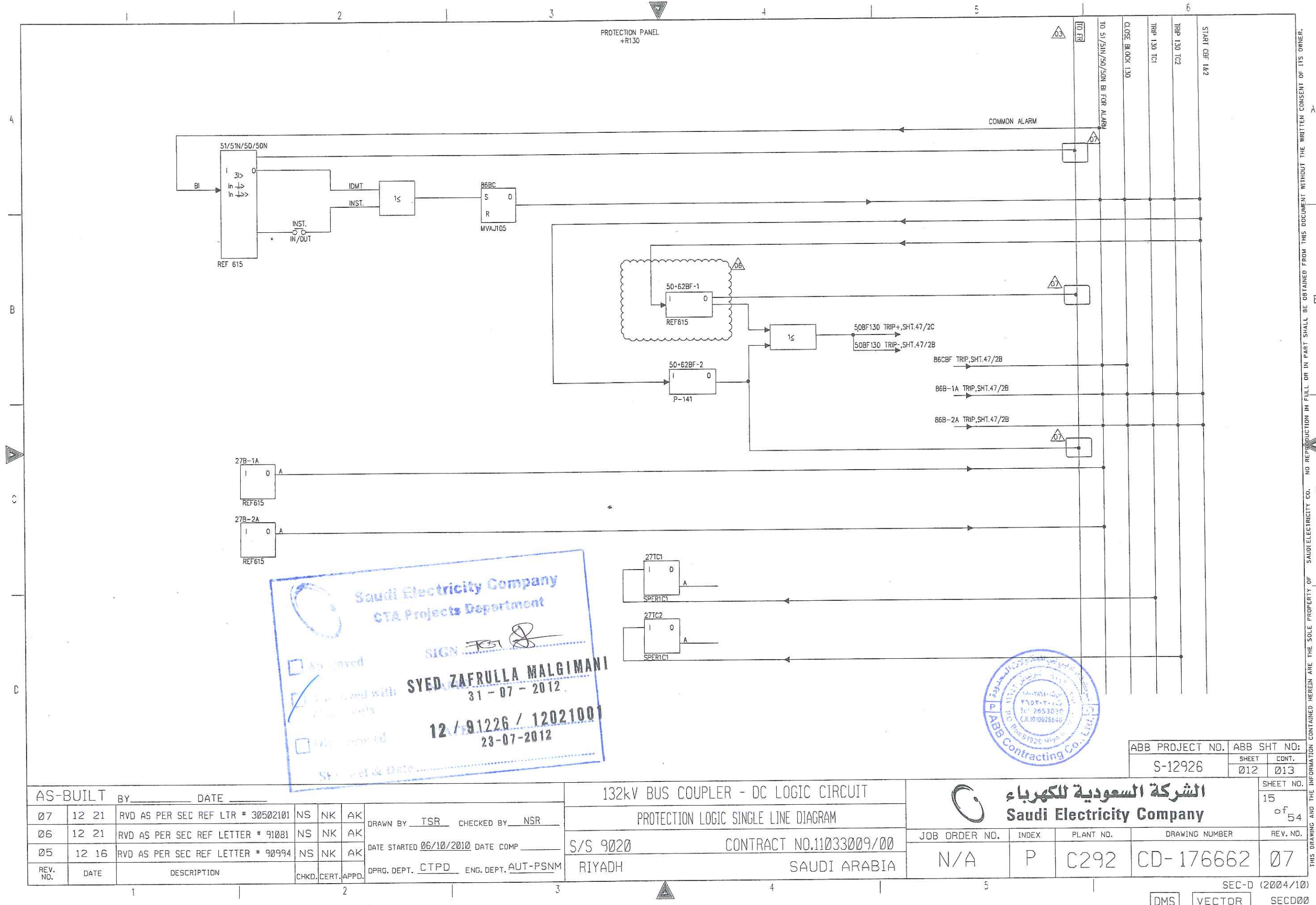
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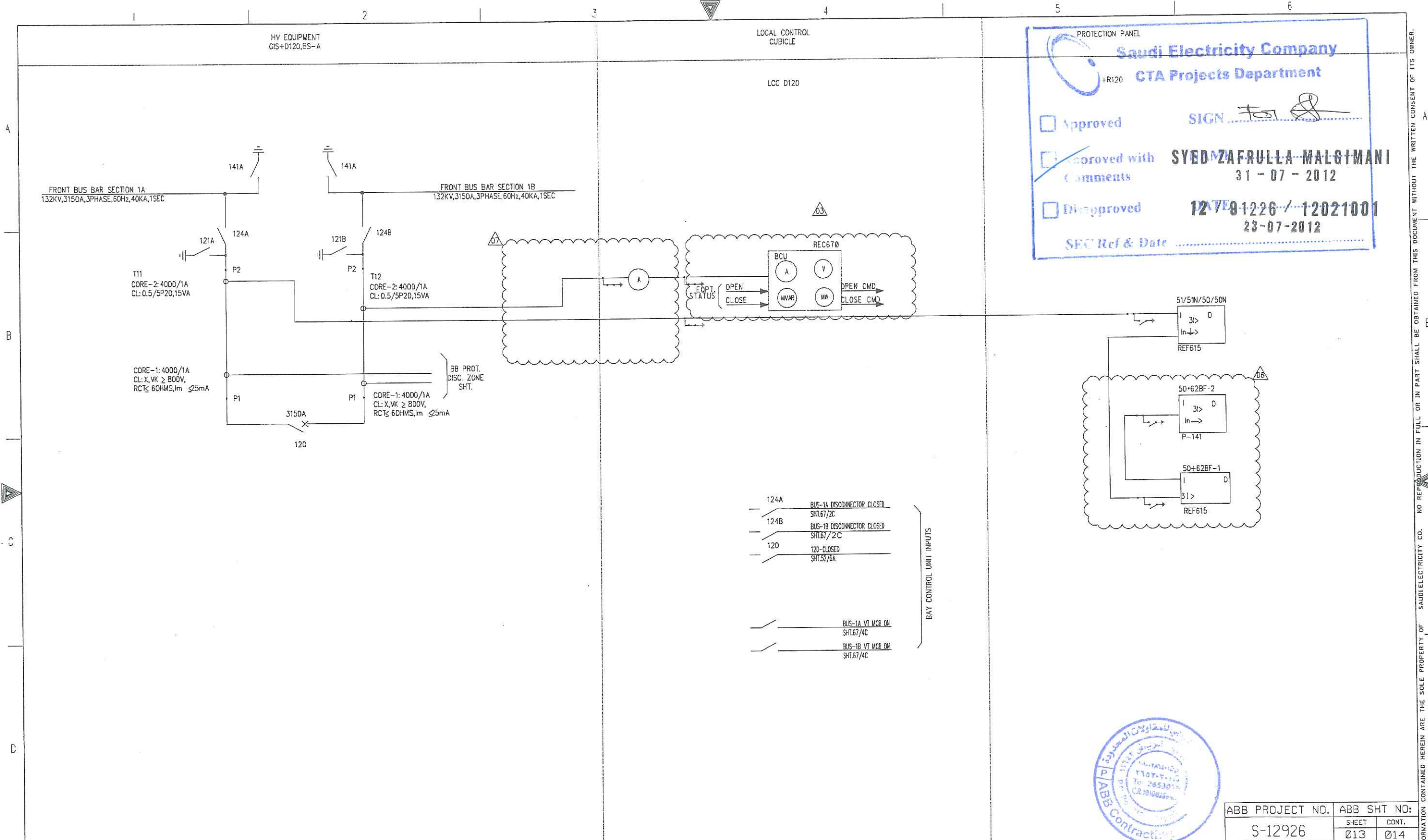
132kV BUS COUPLER -1 AC CIRCUIT -130
PROTECTION LOGIC SINGLE LINE DIAGRAM
S/S 9020 CONTRACT NO.11033009/00
RIYADH SAUDI ARABIA

JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
N/A	P	C292	CD-176662	07

ABB PROJECT NO.	ABB SHT NO.
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PROTECTION PANEL

Saudi Electricity Company
CTA Projects Department

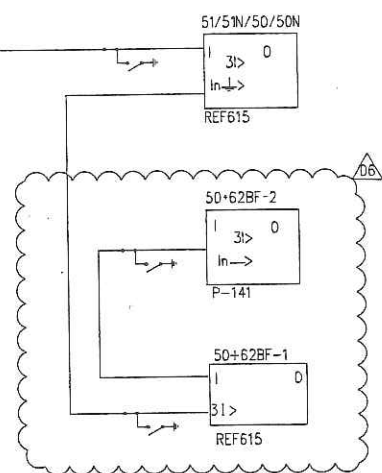
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☐ Approved SIGN *[Signature]*

☒ Approved with Comments **SYED ZAFRULLA MALGIMANI**
31-07-2012


☐ Disapproved **12-07-2012** / **12021001**
23-07-2012

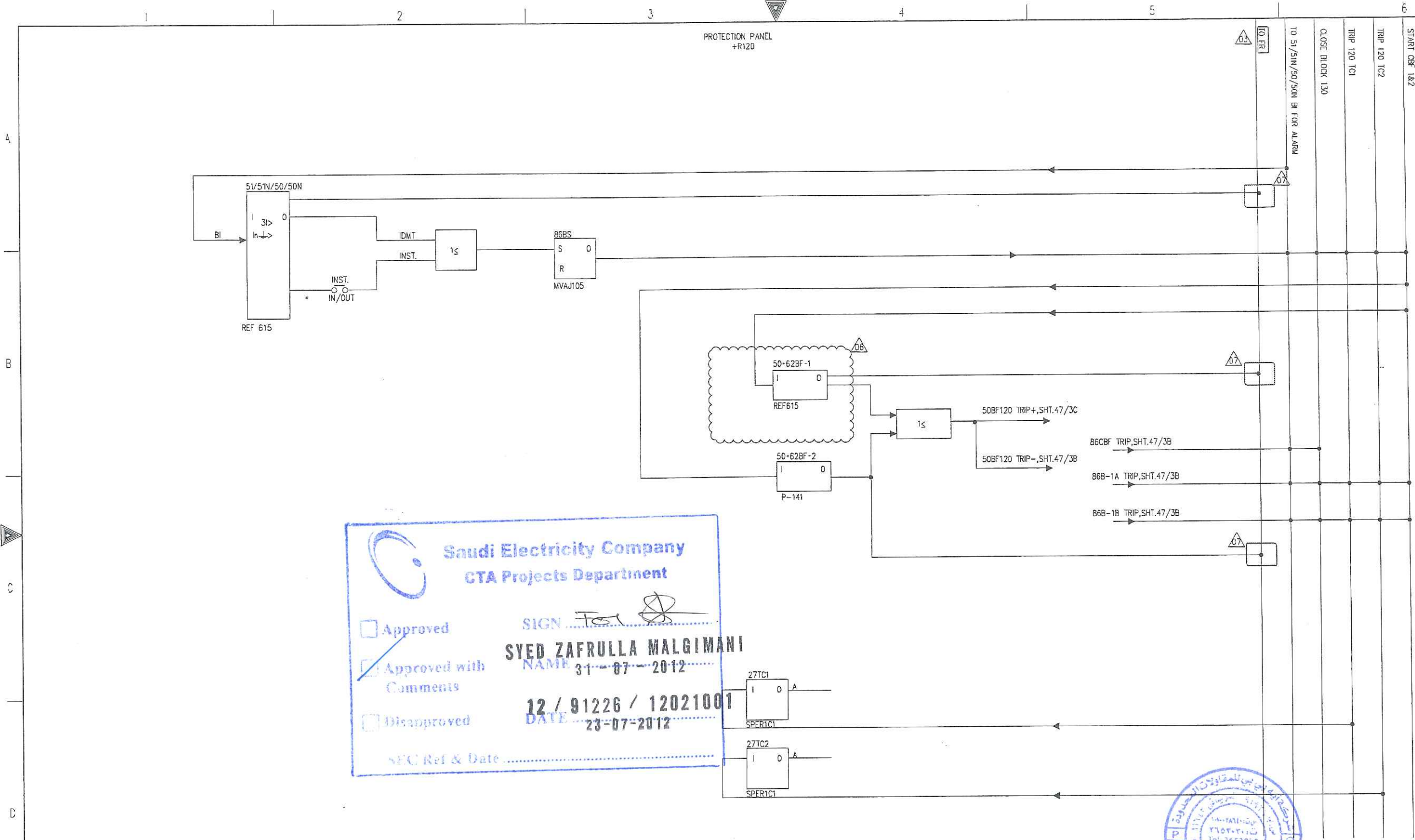
SEC Ref & Date



- BAY CONTROL UNIT INPUTS
- 124A BUS-1A DISCONNECTOR CLOSED SH1.67/2C
 - 124B BUS-1B DISCONNECTOR CLOSED SH1.67/2C
 - 120 120-CLOSED SH1.52/6A
 - BUS-1A VT MCB ON SH1.67/4C
 - BUS-1B VT MCB ON SH1.67/4C



AS-BUILT BY _____ DATE _____						132kV BUS SECTION - 1 AC CIRCUIT		 <div>الشركة السعودية للكهرباء Saudi Electricity Company</div>		SHEET NO. 16 of 54				
Ø7	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	DRAWN BY <u>TSR</u> CHECKED BY <u>NSR</u>				PROTECTION LOGIC SINGLE LINE DIAGRAM		REV. NO.		
Ø6	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED <u>06/10/2010</u> DATE COMP _____		S/S 9020 CONTRACT NO.11033009/00		JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
Ø5	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSNM</u>		RIYADH SAUDI ARABIA		N/A	P	C292	CD-176662	Ø7
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.									SEC-D (2004/10)



Saudi Electricity Company
CTA Projects Department


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☐ Disapproved

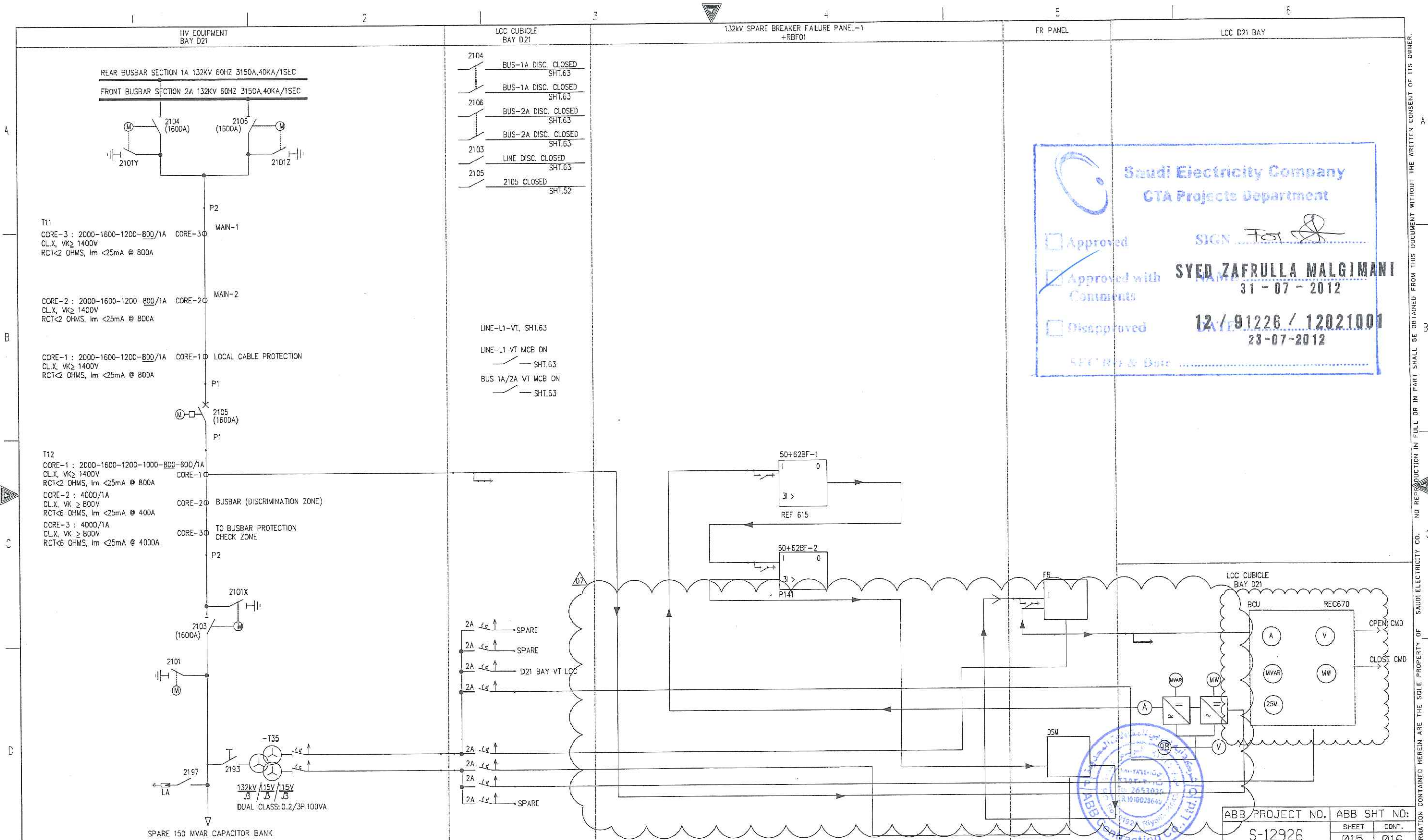
SIGN Fest
SYED ZAFRULLA MALGIMANI
NAME 31-07-2012
DATE 12 / 91226 / 12021001
DATE 23-07-2012

SEC Ref & Date



ABB PROJECT NO.		ABB SHT NO:	
S-12926		SHEET 014	CONT. 015

AS-BUILT BY _____ DATE _____						132kV BUS SECTION - 1 DC LOGIC CIRCUIT		<div></div> <div>الشركة السعودية للكهرباء</div> <div>Saudi Electricity Company</div>				SHEET NO.					
07	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	DRAWN BY <u>TSR</u> CHECKED BY <u>NSR</u>						PROTECTION LOGIC SINGLE LINE DIAGRAM		17			
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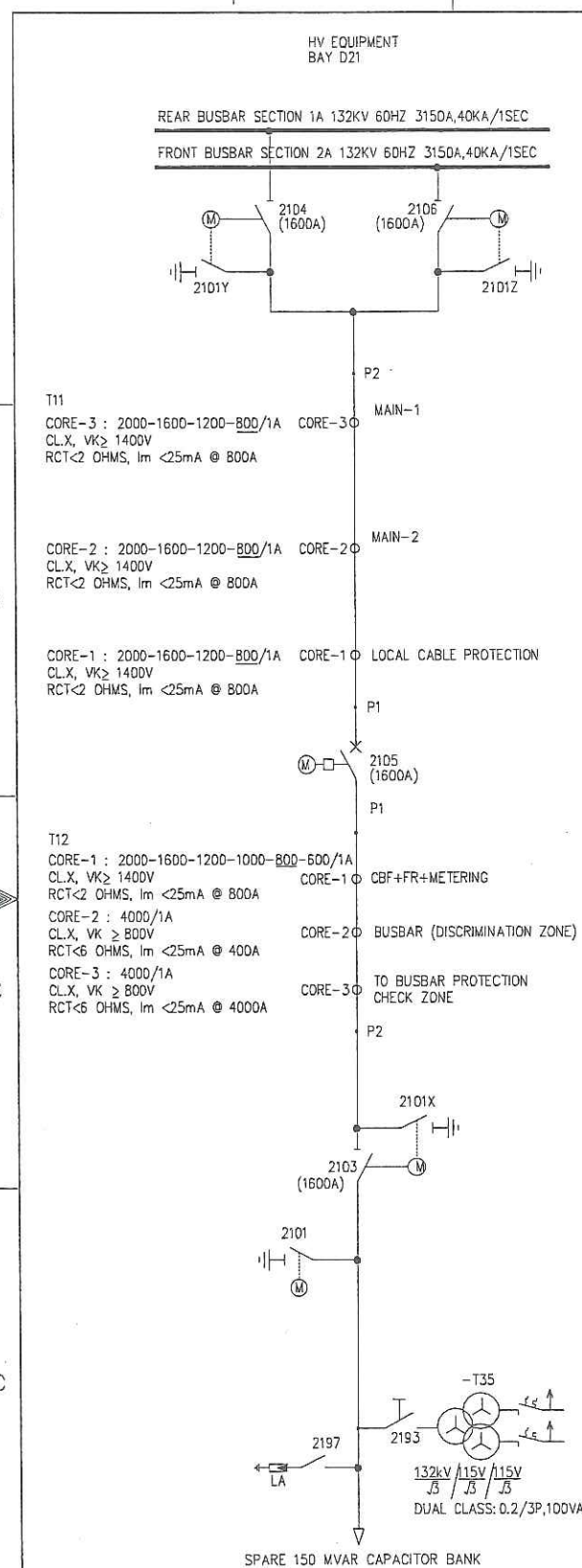
☐ Approved
☒ Approved with Comments
☐ Disapproved

SIGN *[Signature]*
SYED ZAFRULLA MALGIMANI
 31-07-2012
 12/91226 / 12021001
 23-07-2012

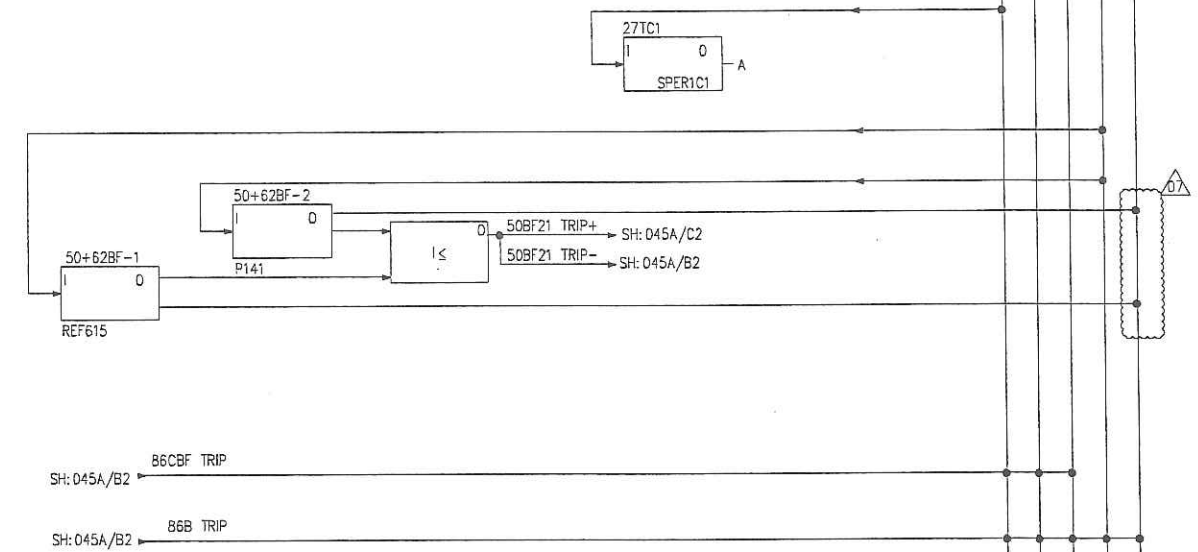
SPE No & Date

AS-BUILT BY _____ DATE _____										132kV SPARE D21 150 MVAR CAPACITOR BFR AC CIRCUIT										<div></div> <div>الشركة السعودية للكهرباء</div> <div>Saudi Electricity Company</div>					SHEET NO.	
Ø7	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	DRAWN BY <u>TSR</u> CHECKED BY <u>NSR</u>					PROTECTION LOGIC SINGLE LINE DIAGRAM					18										
Ø6	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED <u>06/10/2010</u> DATE COMP _____					S/S <u>9020</u> CONTRACT NO. <u>11033009/00</u>					of 54										
Ø5	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSNM</u>					RIYADH SAUDI ARABIA					REV. NO.										
REV. NO.	DATE	DESCRIPTION		CHKD.	CERT.	APPD.									JOB ORDER NO.		INDEX	PLANT NO.	DRAWING NUMBER	Ø7						
															N/A		P	C292	CD-176662							

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132kV SPARE BREAKER FAILURE PANEL-1
+RBF01



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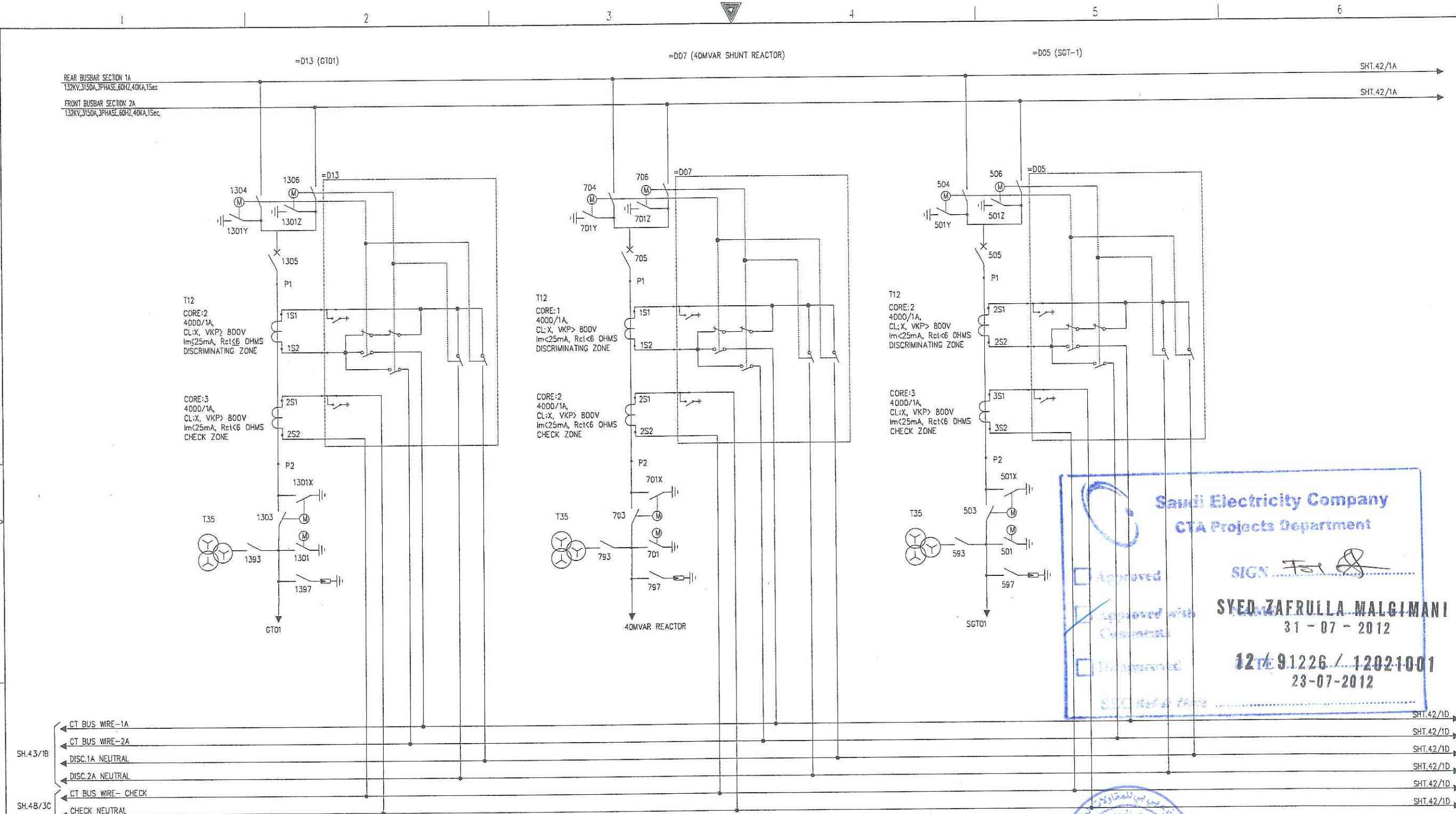
SYED ZAFRULLA MALGIMANI
31-07-2012

12/91226 / 12021001
23-07-2012

SEC Ref & Date



AS-BUILT BY _____ DATE _____										132kV SPARE D21 150 MVAR CAPACITOR BFR DC LOGIC CIRCUIT										<div></div> <div>الشركة السعودية للكهرباء Saudi Electricity Company</div>					SHEET NO. 19 of 54	
07	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	DRAWN BY <u>TSR</u> CHECKED BY <u>NSR</u>					PROTECTION LOGIC SINGLE LINE DIAGRAM					JOB ORDER NO.									INDEX	PLANT NO.
06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED <u>06/10/2010</u> DATE COMP _____					S/S 9020 CONTRACT NO.11033009/00					N/A					P	C292	CD- 176662	07		
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSNM</u>					RIYADH SAUDI ARABIA															
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.																					



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23-07-2012

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AS-BUILT BY _____ DATE _____					
Ø7	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK
Ø6	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK
Ø5	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.

DRAWN BY TSR CHECKED BY NSR

DATE STARTED 06/10/2010 DATE COMP _____

OPRG. DEPT. CTPD ENG. DEPT. AUT-PSNM

BUS BAR PROTECTION AC CIRCUIT

PROTECTION LOGIC SINGLE LINE DIAGRAM

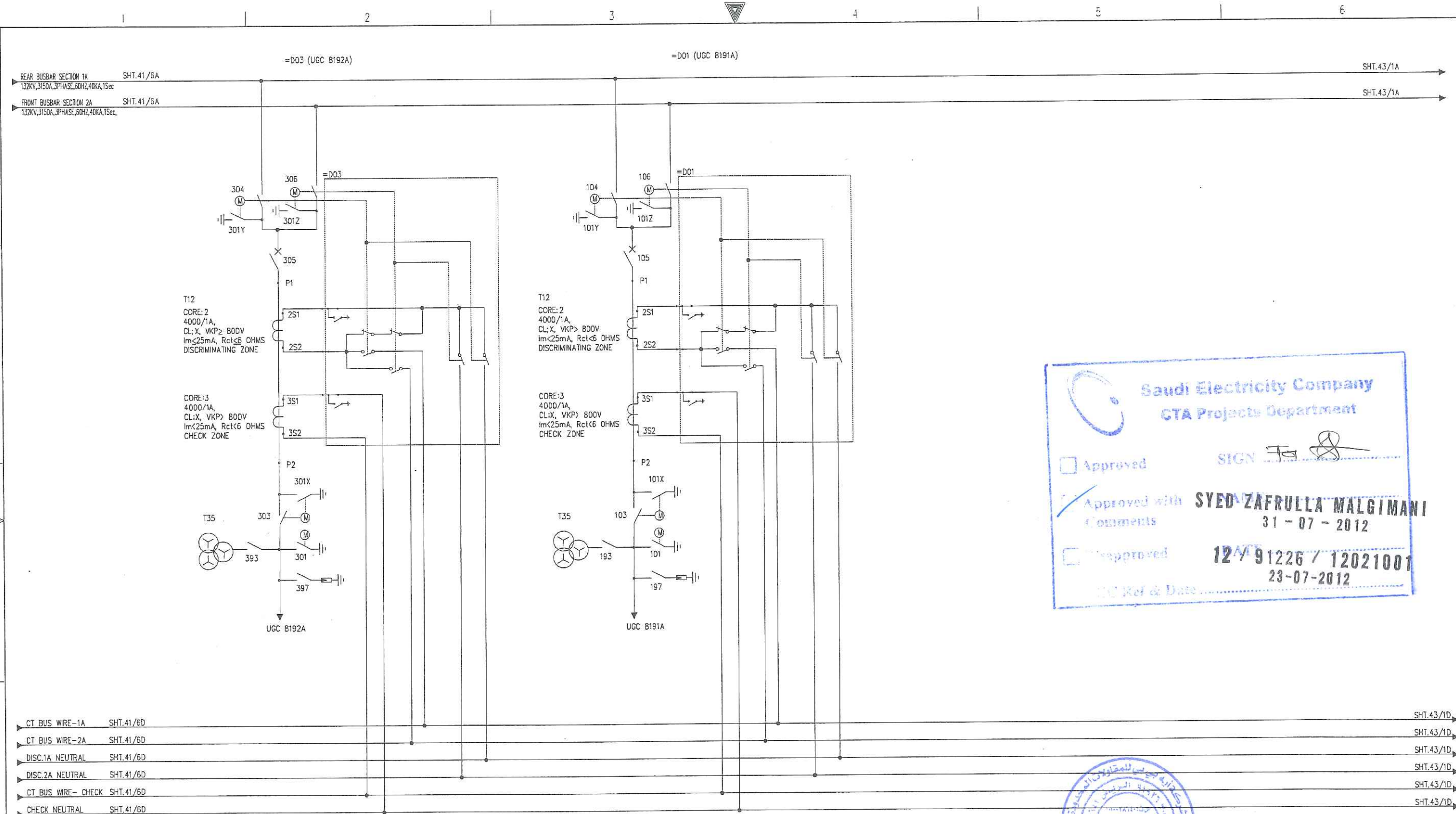
S/S 9020 CONTRACT NO.11033009/00

RIYADH SAUDI ARABIA

الشركة السعودية للكهرباء Saudi Electricity Company				SHEET NO. 22 of 54	
JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.	
N/A	P	C292	CD-176662	Ø7	

ABB PROJECT NO.	ABB SHT NO:
S-12926	SHEET 041 CONT. 042


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12/91226 / 12021001
23-07-2012

AS-BUILT BY _____ DATE _____							BUS BAR PROTECTION AC CIRCUIT				<div> الشركة السعودية للكهرباء Saudi Electricity Company</div>				SHEET NO. 23 of 54					
DRAWN BY <u>TSR</u> CHECKED BY <u>NSR</u>							PROTECTION LOGIC SINGLE LINE DIAGRAM								REV. NO.					
07	12	21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	DATE STARTED <u>06/10/2010</u> DATE COMP _____				S/S <u>9020</u>		CONTRACT NO. <u>11033009/00</u>		JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.	
06	12	21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED <u>06/10/2010</u> DATE COMP _____				S/S <u>9020</u>		CONTRACT NO. <u>11033009/00</u>		N/A	P	C292	CD-176662	07	
05	12	16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	DATE STARTED <u>06/10/2010</u> DATE COMP _____				S/S <u>9020</u>		CONTRACT NO. <u>11033009/00</u>							
REV. NO.	DATE	DESCRIPTION			CHKD.	CERT.	APPD.	OPRG. DEPT. <u>CTPD</u>		ENG. DEPT. <u>AUT-PSNM</u>		RIYADH		SAUDI ARABIA						

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2

3

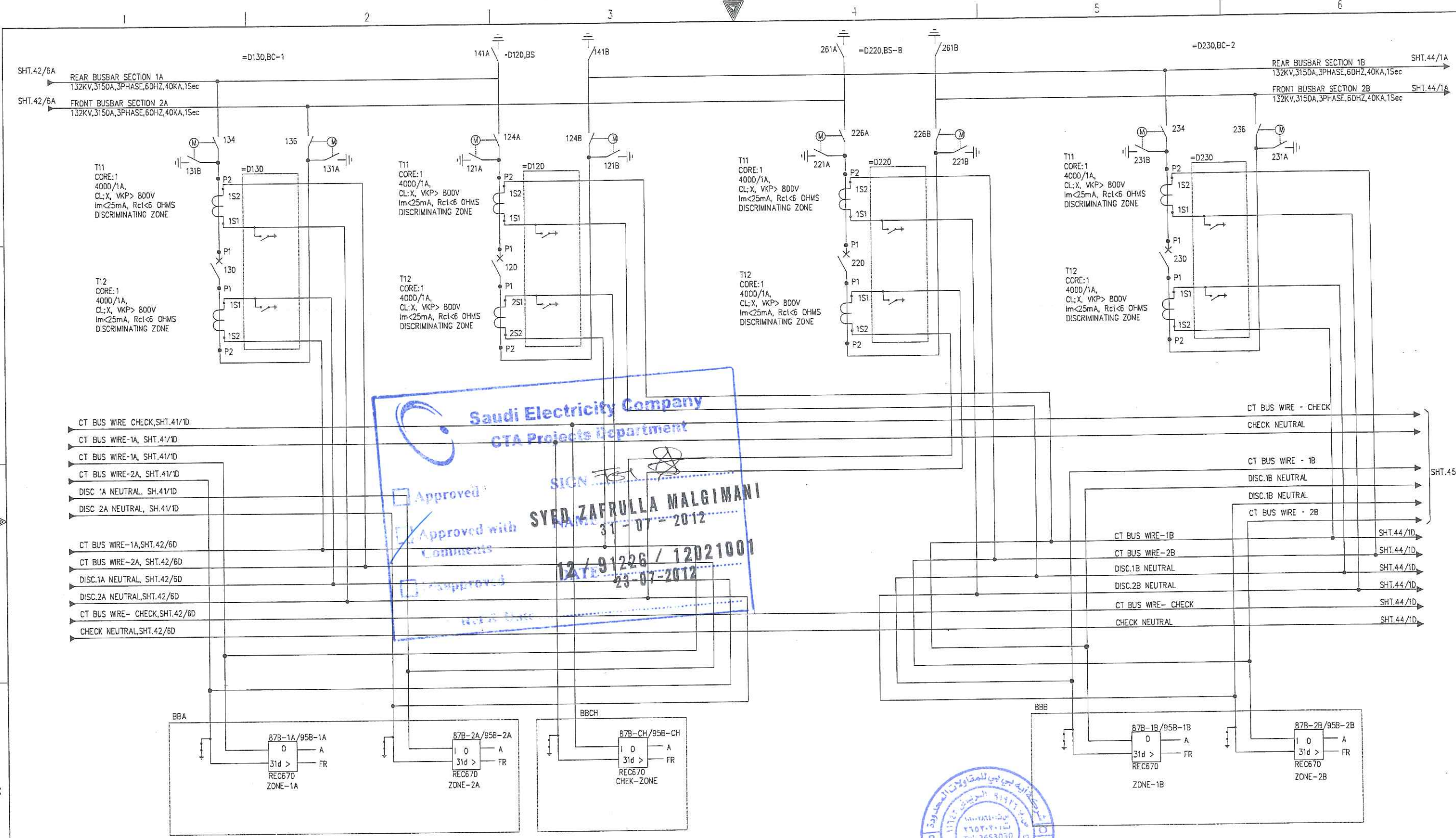
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SEC-D (2004/10)

DMS VECTOR

SECD00



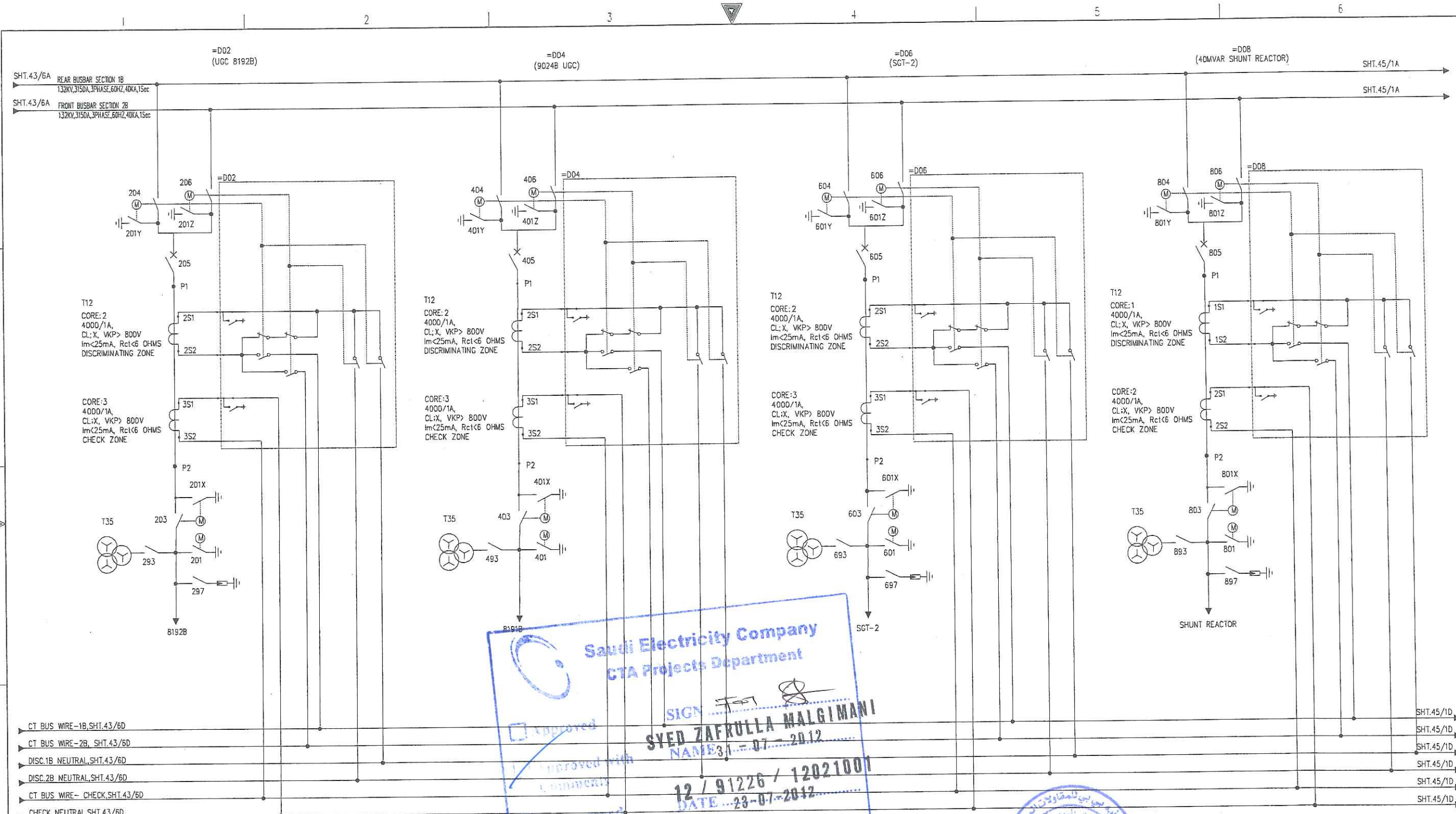
Saudi Electricity Company
 CTA Projects Department
 Approved: **SYED ZAFRULLA MALGIMANI**
 31-07-2012
 12/91226 / 12D21001
 23-07-2012



AS-BUILT BY _____ DATE _____			BUS BAR PROTECTION AC CIRCUIT			الشركة السعودية للكهرباء Saudi Electricity Company			ABB PROJECT NO. S-12926		ABB SHT NO. 043		SHEET NO. 24 of 54	
PROTECTION LOGIC SINGLE LINE DIAGRAM			CONTRACT NO. 11033009/00			JOB ORDER NO. N/A			INDEX P			PLANT NO. C292		
S/S 9020			SAUDI ARABIA			DRAWING NUMBER CD-176662			REV. NO. 07			SEC-D (2004/10)		
DMS			VECTOR			SEC000								

REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.
07	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK
06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK

DRAWN BY	TSR	CHECKED BY	NSR
DATE STARTED	06/10/2010	DATE COMP	
OPRG. DEPT.	CTPD	ENG. DEPT.	AUT-PSNM



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SYED ZAFRULLA MALGIMANI
 NAME: 31-07-2012
 12 / 91226 / 12021001
 DATE: 23-07-2012



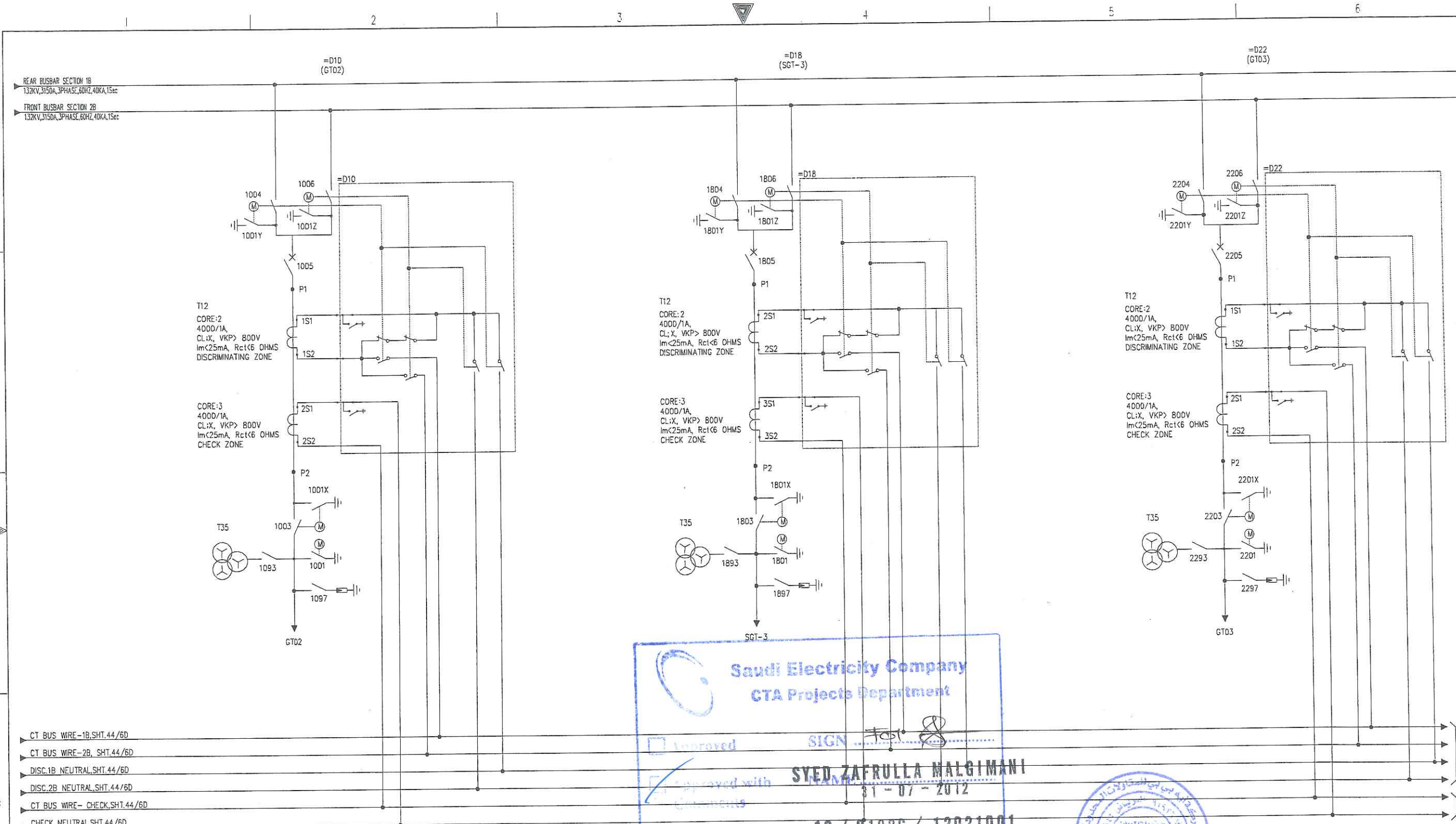
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Ø6	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK
Ø5	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.

BUS BAR PROTECTION AC CIRCUIT	
PROTECTION LOGIC SINGLE LINE DIAGRAM	
S/S 9020	CONTRACT NO.11033009/00
RIYADH	SAUDI ARABIA

الشركة السعودية للكهرباء		SHEET NO.	
Saudi Electricity Company		25	of 54
JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER
N/A	P	C292	CD-176662
		REV. NO.	Ø7

ABB PROJECT NO.	ABB SHT NO:
S-12926	Ø44 Ø45

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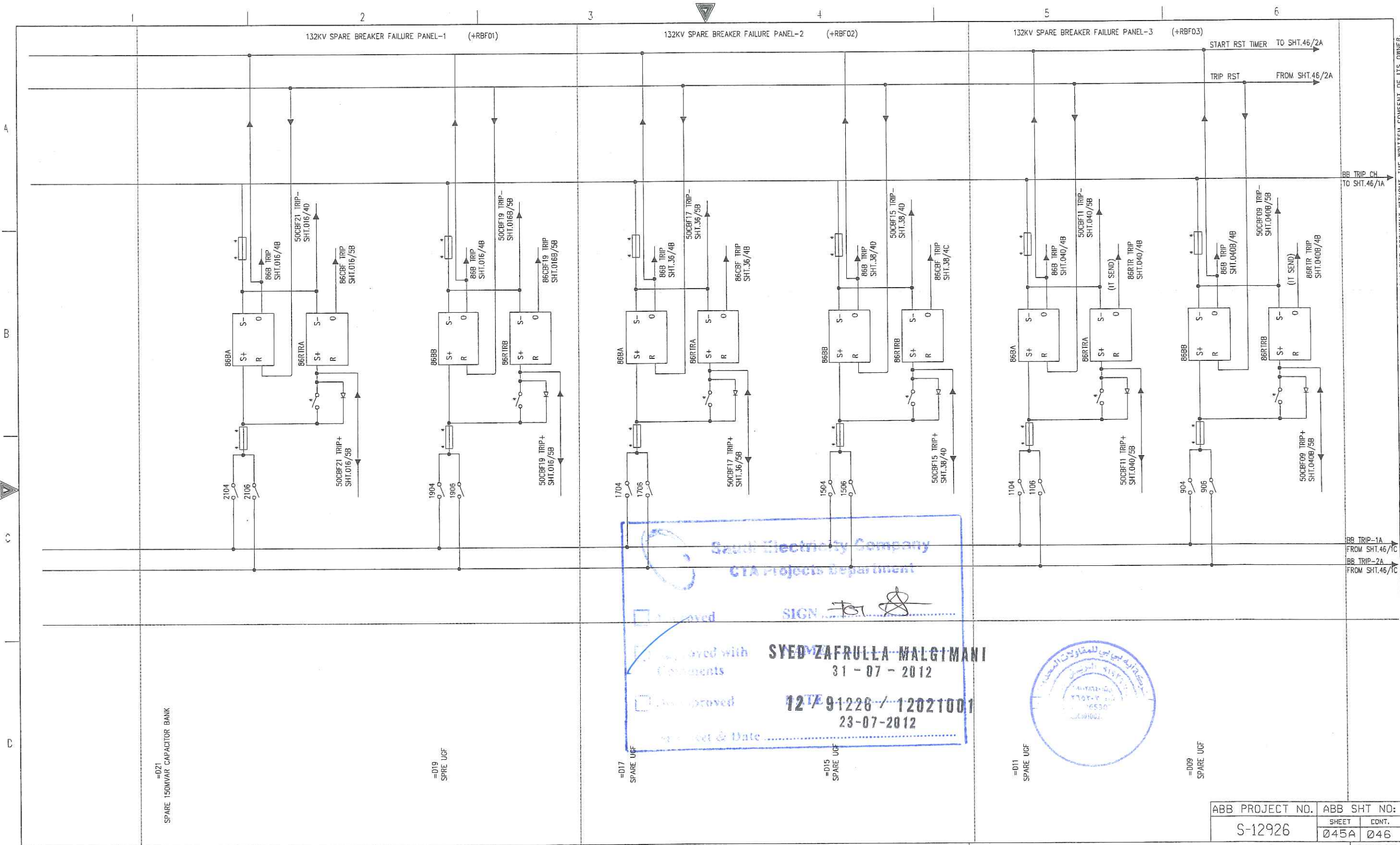
Approved SIGN *[Signature]*
Approved with Comments **SYED ZAFRULLA MALGIMANI**
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23-07-2012



ABB PROJECT NO.	ABB SHT NO:				
S-12926	<table border="1"> <tr> <th>SHEET</th><th>CONT.</th></tr> <tr> <td>045</td><td>045A</td></tr> </table>	SHEET	CONT.	045	045A
SHEET	CONT.				
045	045A				

AS-BUILT BY _____ DATE _____						BUS BAR PROTECTION AC CIRCUIT		الشركة السعودية للكهرباء				SHEET NO.
Ø7	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	PROTECTION LOGIC SINGLE LINE DIAGRAM		Saudi Electricity Company				26
Ø6	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	S/S 9020		CONTRACT NO. 11033009/00				of 54
Ø5	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	DATE STARTED 06/10/2010 DATE COMP _____		SAUDI ARABIA				REV. NO.
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.	OPRG. DEPT. CTPD	ENG. DEPT. AUT-PSNM	JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	07

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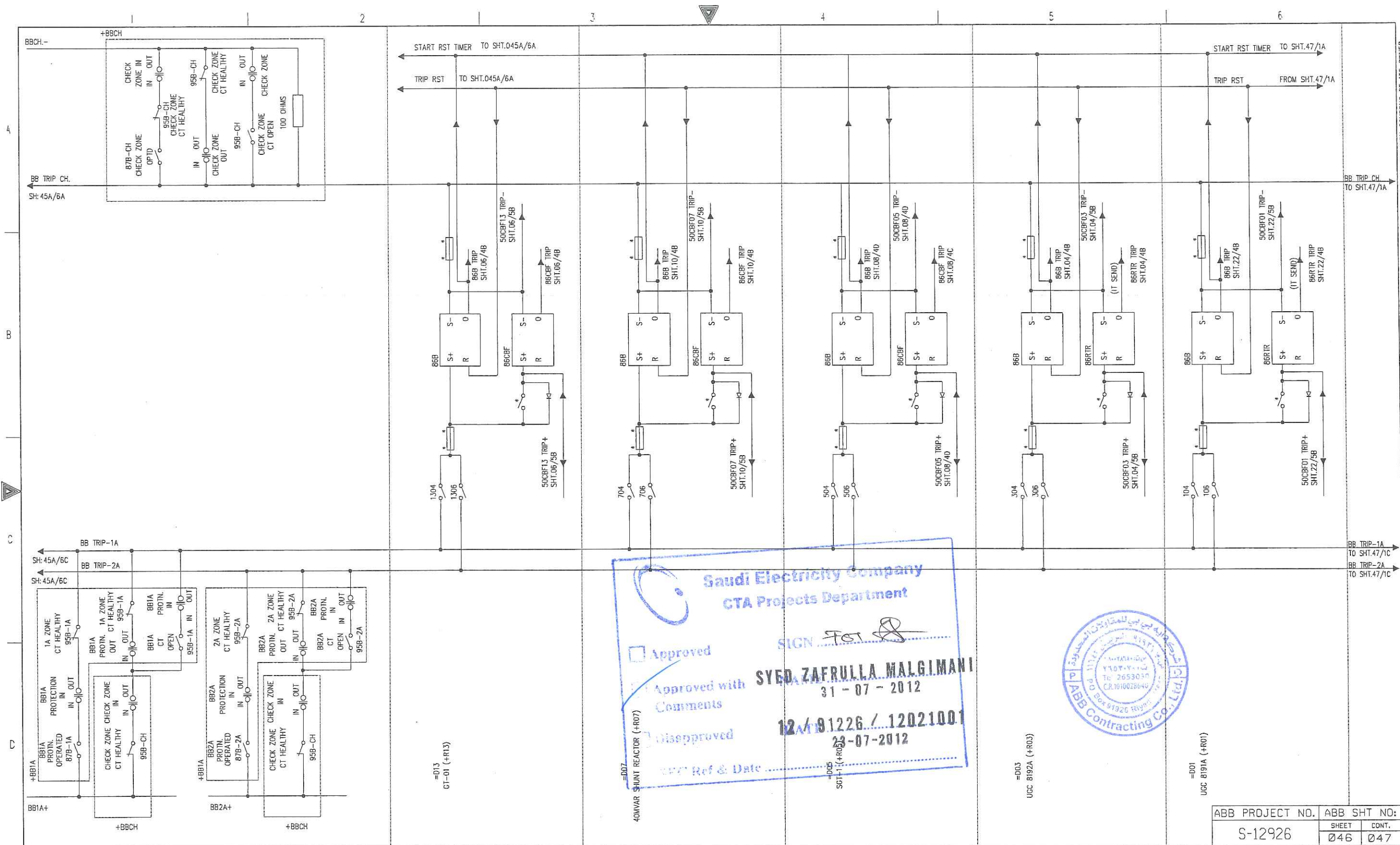


AS-BUILT BY _____ DATE _____					
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06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.

BUS BAR PROTECTION DC CIRCUIT	
PROTECTION LOGIC SINGLE LINE DIAGRAM	
S/S 9020	CONTRACT NO.11033009/00
RIYADH	SAUDI ARABIA

الشركة السعودية للكهرباء Saudi Electricity Company		SHEET NO. 27 of 54	
JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER
N/A	P	C292	CD-176662
ABB PROJECT NO. S-12926		ABB SHT NO. 045A 046	
REV. NO. 07		REV. NO. 07	

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23-07-2012

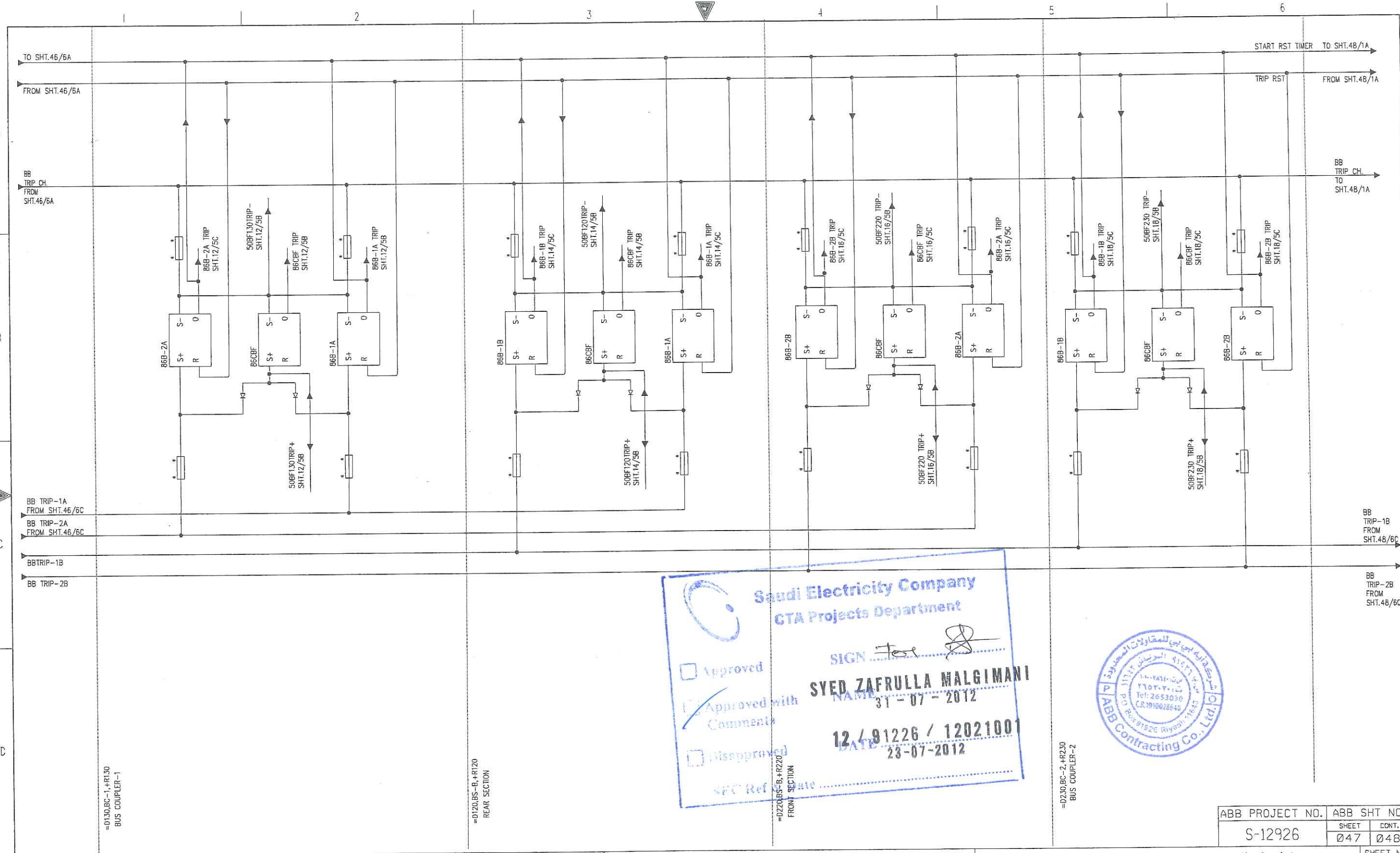
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40kVAR SHUNT REACTOR (+R07)

SGT-1 (+R05)



AS-BUILT BY _____ DATE _____						BUS BAR PROTECTION DC CIRCUIT		<div><div>الشركة السعودية للكهرباء Saudi Electricity Company</div></div> <div>SHEET NO. 28 of 54</div>						
07	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	DRAWN BY <u>TSR</u> CHECKED BY <u>NSR</u>						PROTECTION LOGIC SINGLE LINE DIAGRAM		
06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED <u>06/10/2010</u> DATE COMP _____		S/S <u>9020</u> CONTRACT NO. <u>11033009/00</u>		JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSNM</u>		RIYADH SAUDI ARABIA		N/A	P	C292	CD- 176662	07
REV. NO.	DATE	DESCRIPTION		CHKD.	CERT.	APPD.								



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31-07-2012
12/91226 / 12021001
23-07-2012

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AS-BUILT BY _____ DATE _____					
07	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK
06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.

BUS BAR PROTECTION DC CIRCUIT	
PROTECTION LOGIC SINGLE LINE DIAGRAM	
S/S 9020	CONTRACT NO.11033009/00
RIYADH	SAUDI ARABIA

الشركة السعودية للكهرباء Saudi Electricity Company		SHEET NO. 29 of 54	
JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER
N/A	P	C292	CD-176662
REV. NO. 07		REV. NO. 07	

ABB PROJECT NO.	ABB SHT NO.
S-12926	047 048

PHILOSOPHY OF 132KV DOUBLE BUS- BAR PROTECTION UNDER DIFFERENT OPERATING CONDITIONS VIS-A-VIS TRIPPING INITIATION OF BUS-BAR PROTECTION

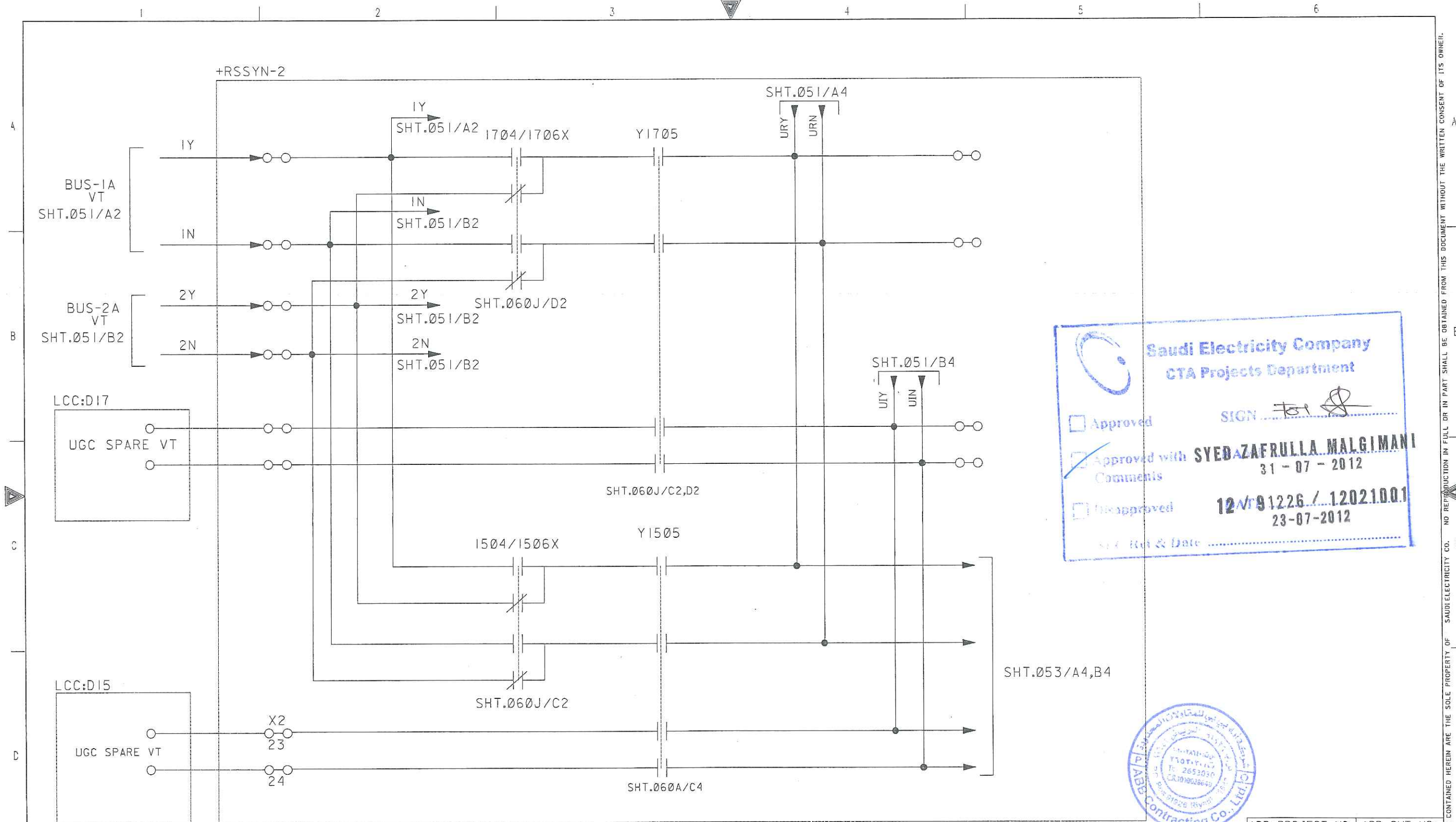
DISCRIMINATIVE ZONE			CHECK ZONE			TRIP INITIATE
IN/OUT POSITION	CT SUP. STATUS	TRIP RRELAY	IN/OUT POSITION	CT SET. STATUS	TRIP RELAY	
IN	HEALTHY	OPERATED	IN	HEALTHY	OPERATED	YES
IN	HEALTHY	OPERATED	OUT	HEALTHY	---	YES
IN	HEALTHY	OPERATED	IN	UNHEALTHY	NOT OPERATED	YES
OUT	HEALTHY	-	IN	HEALTHY	OPERATED	YES
OUT	HEALTHY	-	OUT	HEALTHY	---	NO
OUT	HEALTHY	-	IN	UNHEALTHY	NOT OPERATED	NO
IN	UNHEALTHY	NOT OPERATED	IN	HEALTHY	OPERATED	YES
IN	UNHEALTHY	NOT OPERATED	OUT	HEALTHY	---	NO
IN	UNHEALTHY	NOT OPERATED	IN	UNHEALTHY	NOT OPERATED	NO

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NAME: **SYED ZAFRULLA MALGIMAN**
 DATE: **31-07-2012**
 SEC Ref & Date: **12 / 91226 / 12021001**
23-07-2012

AS-BUILT BY _____ DATE _____						132KV BBP PHILOSOPHY OF TRIPPING		الشركة السعودية للكهرباء		ABB PROJECT NO. S-12926		ABB SHT NO. 050		SHEET NO. 32 of 54	
07	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	DRAWN BY TSR CHECKED BY NSR		PROTECTION LOGIC SINGLE LINE DIAGRAM		Saudi Electricity Company		SHEET CONT. 051		REV. NO. 07	
06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED 06/10/2010 DATE COMP _____		S/S 9020 CONTRACT NO.11033009/00		JOB ORDER NO. N/A		INDEX P		PLANT NO. C292	
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	DATE STARTED 06/10/2010 DATE COMP _____		SAUDI ARABIA		DRAWING NUMBER CD-176662		REV. NO. 07			
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSNM									



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23-07-2012

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ABB PROJECT NO.	ABB SHT NO:
S-12926	SHEET 052 CONT. 053

REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.
07	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK
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05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK

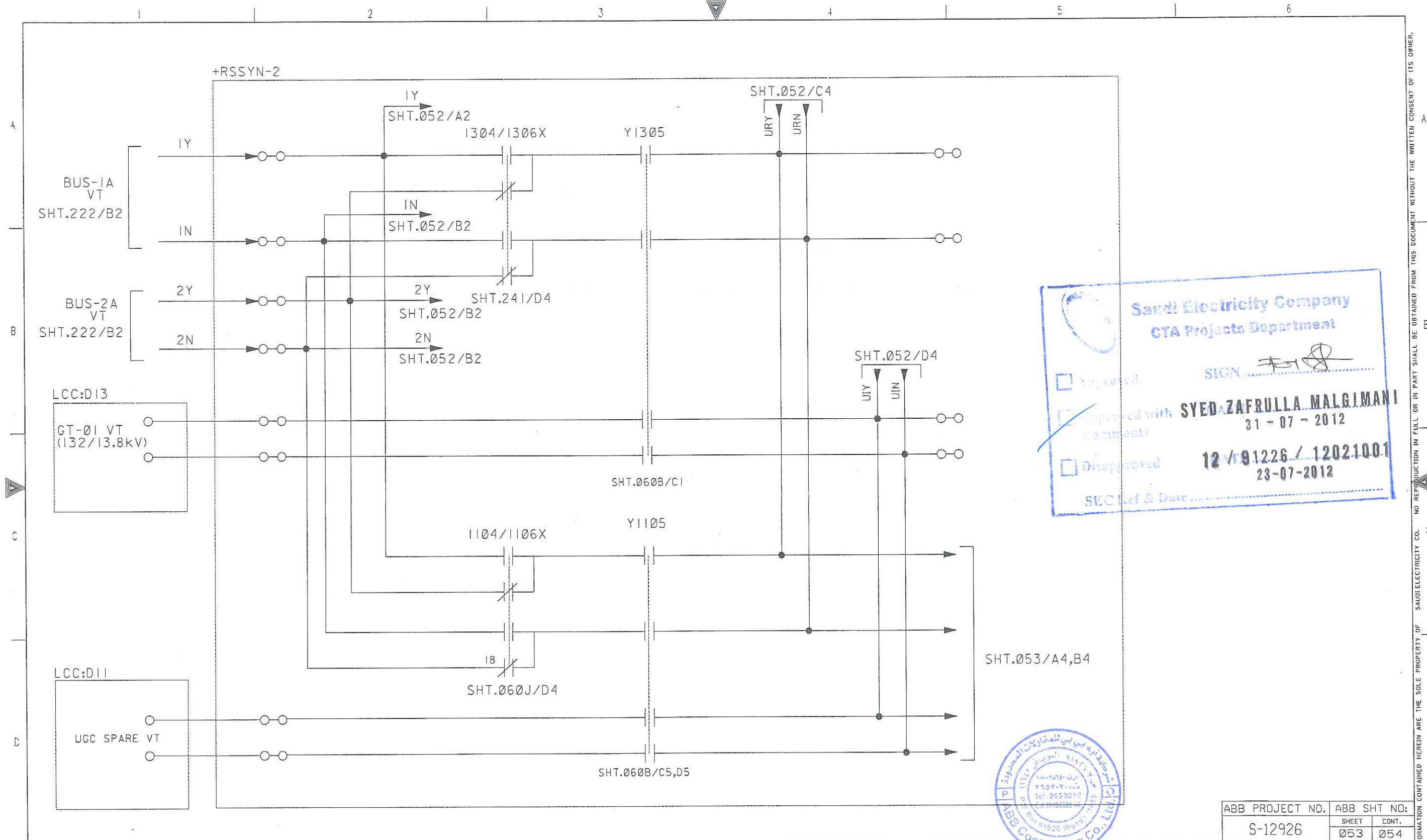
AS-BUILT BY _____ DATE _____

AC CIRCUIT FOR SYSTEM SYNCHRONISER
PROTECTION LOGIC SINGLE LINE DIAGRAM

S/S 9020 CONTRACT NO.11033009/00
RIYADH SAUDI ARABIA

DRAWN BY TSR CHECKED BY NSR
DATE STARTED 06/10/2010 DATE COMP _____
DPRG. DEPT. CTPD ENG. DEPT. AUT-PSNM

JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
N/A	P	C292	CD-176662	07



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31-07-2012

12/01226 / 12021001
23-07-2012

SEC Ref & Date



AS-BUILT				BY				DATE			
07	12	21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	DRAWN BY	TSR	CHECKED BY	NSR	
06	12	21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED	06/10/2010	DATE COMP		
05	12	16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	OPRG. DEPT.	CTPD	ENG. DEPT.	AUT-PSNM	
REV. NO.	DATE	DESCRIPTION				CHKD.	CERT.	APPD.			

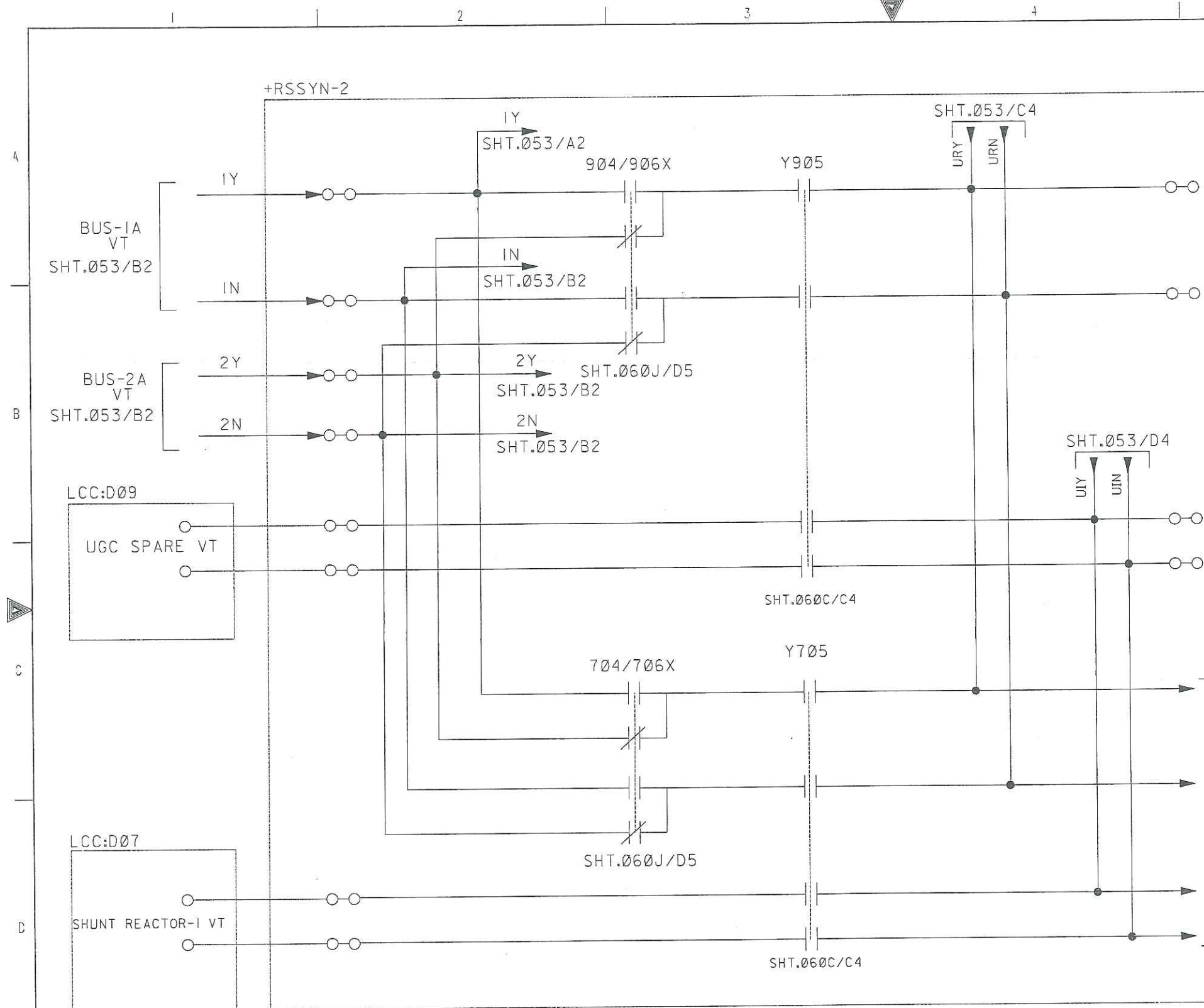
AC CIRCUIT FOR SYSTEM SYNCHRONISER
PROTECTION LOGIC SINGLE LINE DIAGRAM

S/S 9020 CONTRACT NO.11033009/00
RIYADH SAUDI ARABIA

الشركة السعودية للكهرباء
Saudi Electricity Company

JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
N/A	P	C292	CD-176662	07

ABB PROJECT NO.	ABB SHT NO.
S-12926	053 054



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23-07-2012

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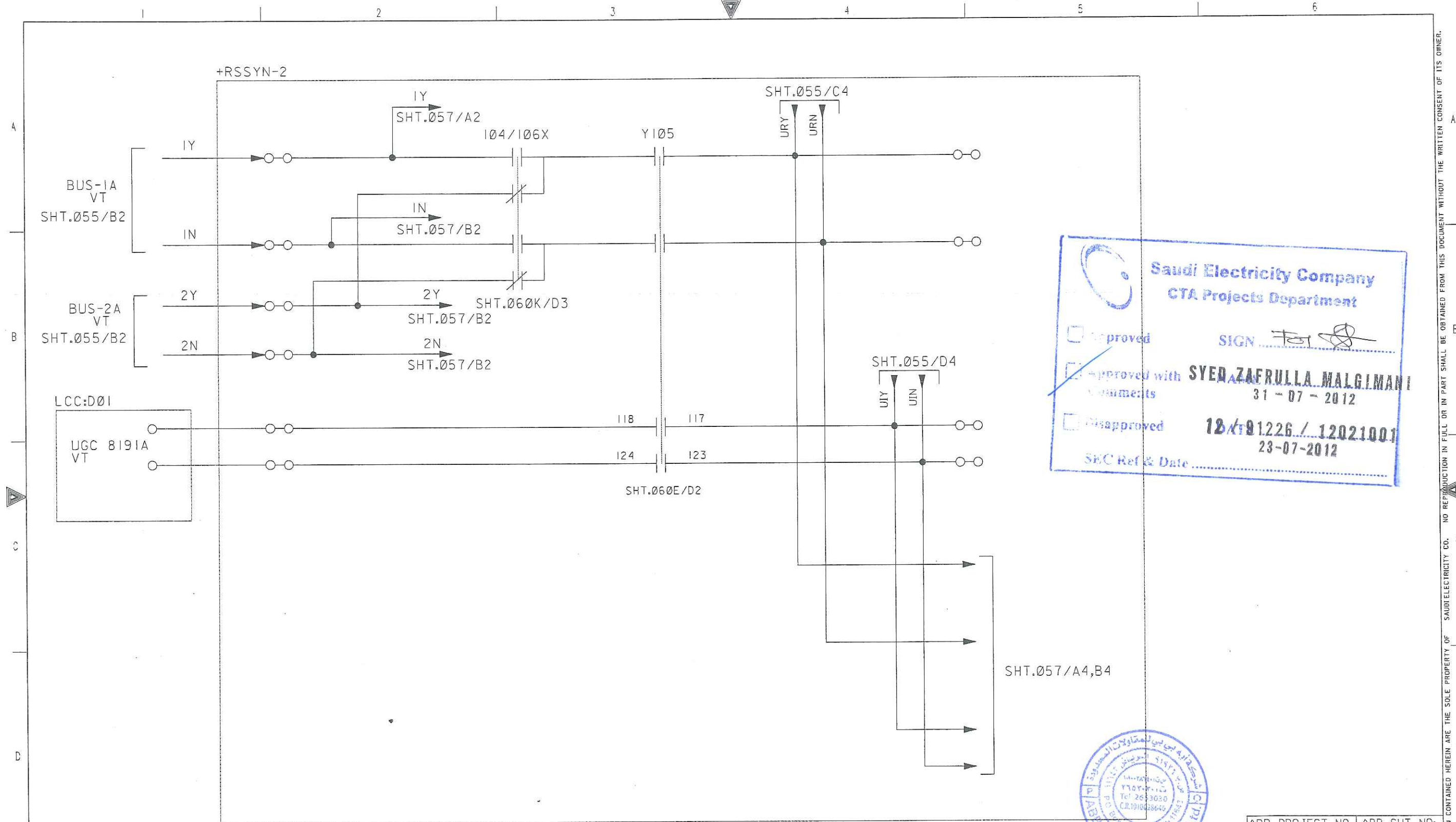
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S-12926	SHEET 054 CONT. 055

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06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED 06/10/2010 DATE COMP _____
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSNM
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.	

AC CIRCUIT FOR SYSTEM SYNCHRONISER	
PROTECTION LOGIC SINGLE LINE DIAGRAM	
S/S 9020	CONTRACT NO.11033009/00
RIYADH	SAUDI ARABIA

الشركة السعودية للكهرباء Saudi Electricity Company					SHEET NO. 36 of 54
JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.	
N/A	P	C292	CD-176662	07	

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23-07-2012

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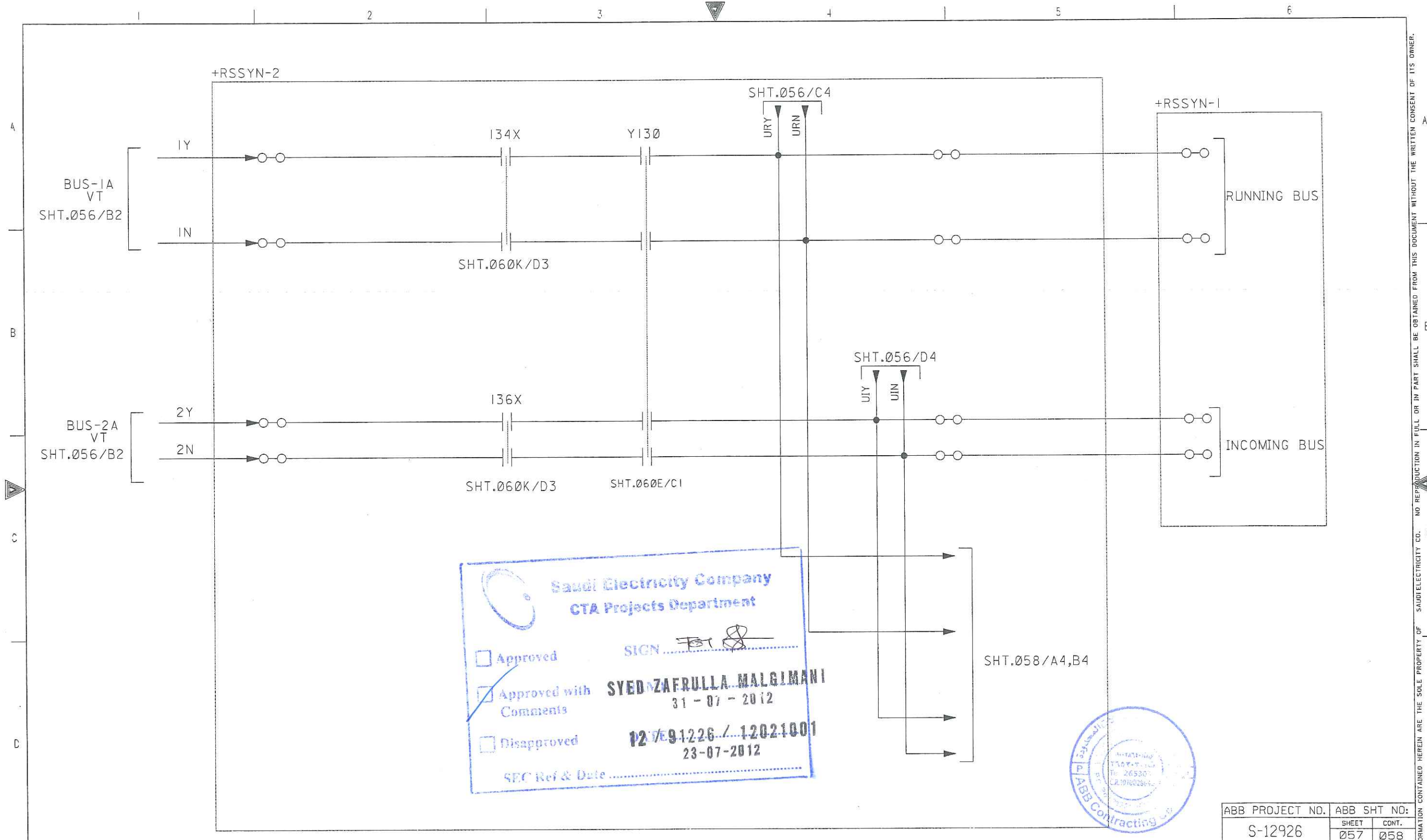
AS-BUILT				BY _____		DATE _____	
07	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	DRAWN BY <u>TSR</u> CHECKED BY <u>NSR</u>	
06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED <u>06/10/2010</u> DATE COMP _____	
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSNM</u>	
REV. NO.	DATE	DESCRIPTION	CHKD. CERT.		APPD.		

AC CIRCUIT FOR SYSTEM SYNCHRONISER	
PROTECTION LOGIC SINGLE LINE DIAGRAM	
S/S 9020	CONTRACT NO. 11033009/00
RIYADH	SAUDI ARABIA

الشركة السعودية للكهرباء Saudi Electricity Company				SHEET NO.
JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
N/A	P	C292	CD-176662	07

ABB PROJECT NO.	ABB SHT NO:
S-12926	SHEET 056 CONT. 057

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12/09/2012 / 12021001

23-07-2012

SEC Ref & Date



AS-BUILT										BY	DATE					
07	12	21	RVD AS PER SEC REF LTR # 30502101				NS	NK	AK	DRAWN BY <u>TSR</u> CHECKED BY <u>NSR</u>						
06	12	21	RVD AS PER SEC REF LETTER # 91081				NS	NK	AK	DATE STARTED <u>06/10/2010</u> DATE COMP _____						
05	12	16	RVD AS PER SEC REF LETTER # 90994				NS	NK	AK	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSNM</u>						
REV. NO.	DATE		DESCRIPTION				CHKD.		CERT.	APPD.						

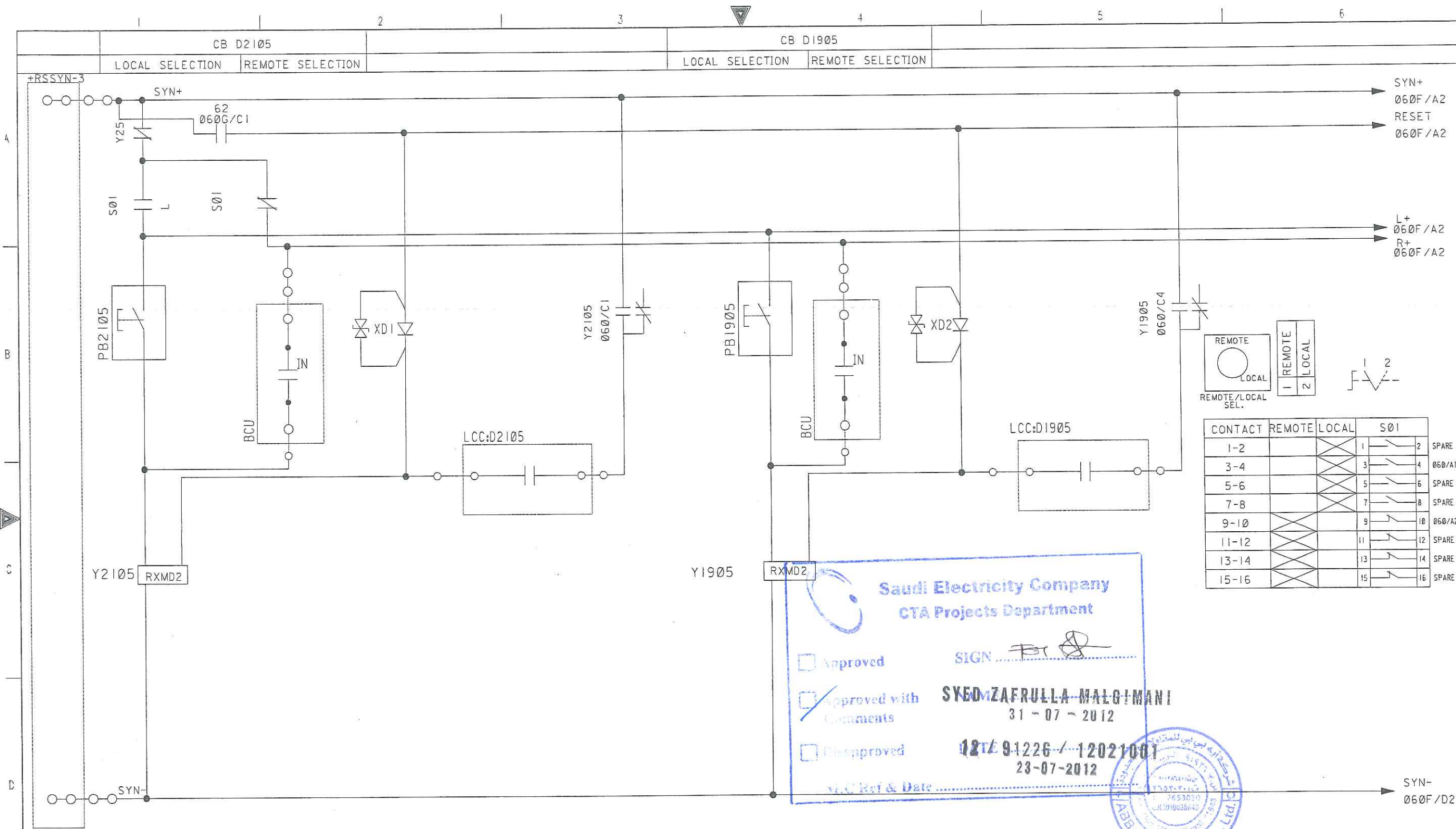
AC CIRCUIT FOR SYSTEM SYNCHRONISER
PROTECTION LOGIC SINGLE LINE DIAGRAM

S/S 9020 CONTRACT NO.11033009/00

RIYADH SAUDI ARABIA

ABB PROJECT NO.		ABB SHT NO:		SHEET NO.	
S-12926		057		39 of 54	
JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.	
N/A	P	C292	CD-176662	07	

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REMOTE		LOCAL	
1	REMOTE	2	LOCAL

CONTACT	REMOTE	LOCAL	S01
1-2			1 SPARE
3-4			3 060/A1
5-6			5 SPARE
7-8			7 SPARE
9-10			9 060/A2
11-12			11 SPARE
13-14			13 SPARE
15-16			15 SPARE

Saudi Electricity Company
CTA Projects Department

☐ Approved
☒ Approved with Comments
☐ Disapproved

SIGN

SYED ZAFARULLAH MALIK
31-07-2012

121 91226-12021001
23-07-2012

V.C Ref & Date

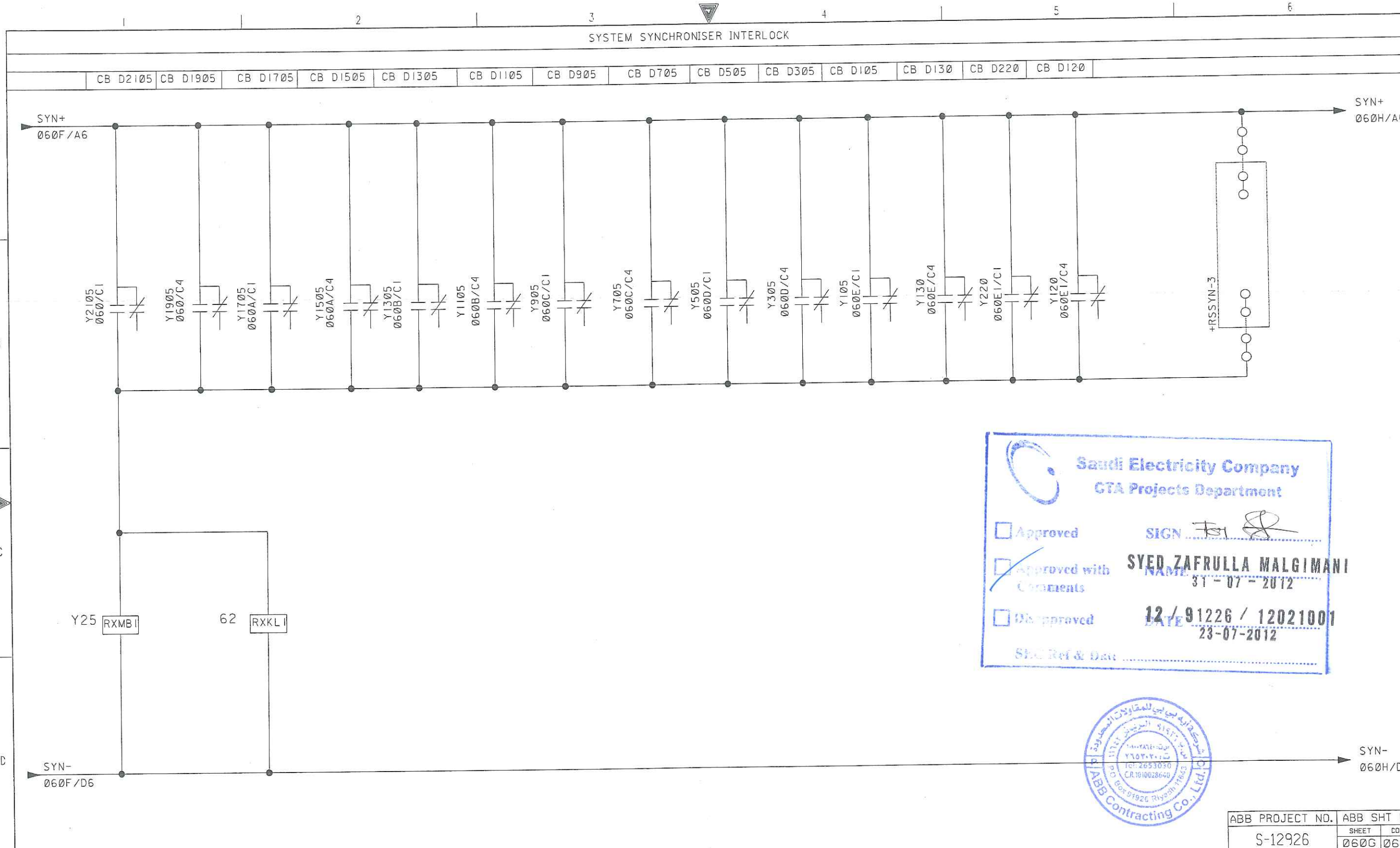
AS-BUILT BY _____ DATE _____			DC LOGIC SYSTEM SYNCHRONISER		الشركة السعودية للكهرباء Saudi Electricity Company		ABB PROJECT NO. S-12926		ABB SHT NO. 42		
07	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	SHEET NO. 42 of 54		SHEET NO. 42		REV. NO. 07	
06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DRAWING NUMBER CD-176662		JOB ORDER NO. N/A		INDEX P	
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	PLANT NO. C292		CONTRACT NO.11033009/00		SAUDI ARABIA	
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.	SAUDI ARABIA		SAUDI ARABIA		SAUDI ARABIA	

SEC-D (2004/10)

DMS VECTOR

SECD00

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Saudi Electricity Company
CTA Projects Department

☐ Approved
☒ Approved with Comments
☐ Disapproved

SIGN: *[Signature]*
NAME: **SYED ZAFRULLA MALGIMANI**
DATE: **31-07-2012**
DATE: **12/91226 / 12021001**
DATE: **23-07-2012**

SIG Ref & Date: _____

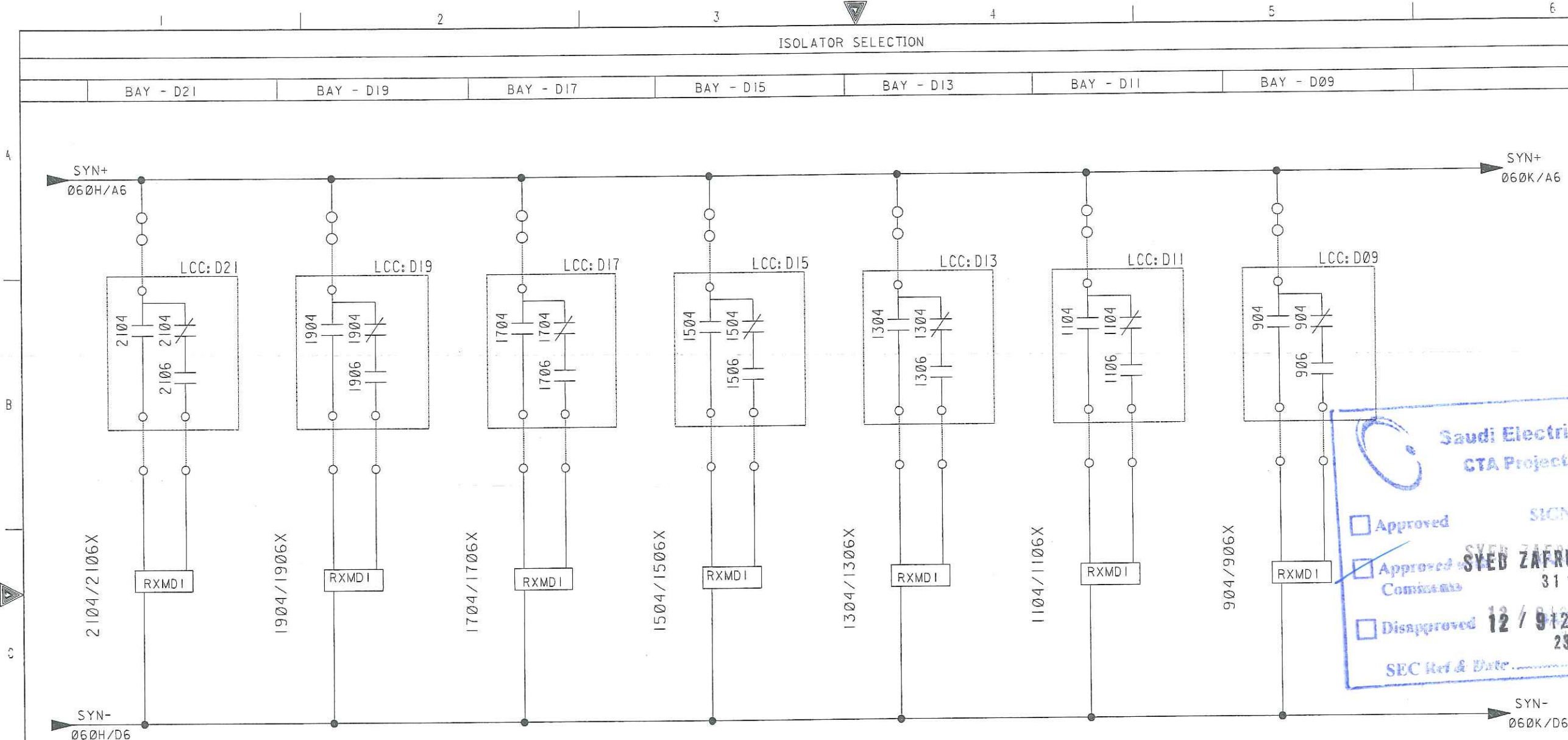


AS-BUILT BY _____ DATE _____						SYSTEM SYNCHRONISER INTERLOCK				الشركة السعودية للكهرباء Saudi Electricity Company				SHEET NO. 44 of 54	
07	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	DRAWN BY TSR CHECKED BY NSR		PROTECTION LOGIC SINGLE LINE DIAGRAM		JOB ORDER NO. N/A		INDEX P		PLANT NO. C292	
06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED 06/10/2010 DATE COMP _____		S/S 9020		CONTRACT NO.11033009/00		DRAWING NUMBER CD-176662		REV. NO. 07	
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSNM		RIYADH		SAUDI ARABIA					
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.										

DMS

VECTOR

SEC-D (2004/10)
SECD00



Saudi Electricity Company
CTA Projects Department

Approved

Approved **SYED ZAFRULLA MALGIMANI**
31-07-2012

Disapproved 12 / 91226 / 1202100
23-07-2012

SEC Ref & Date

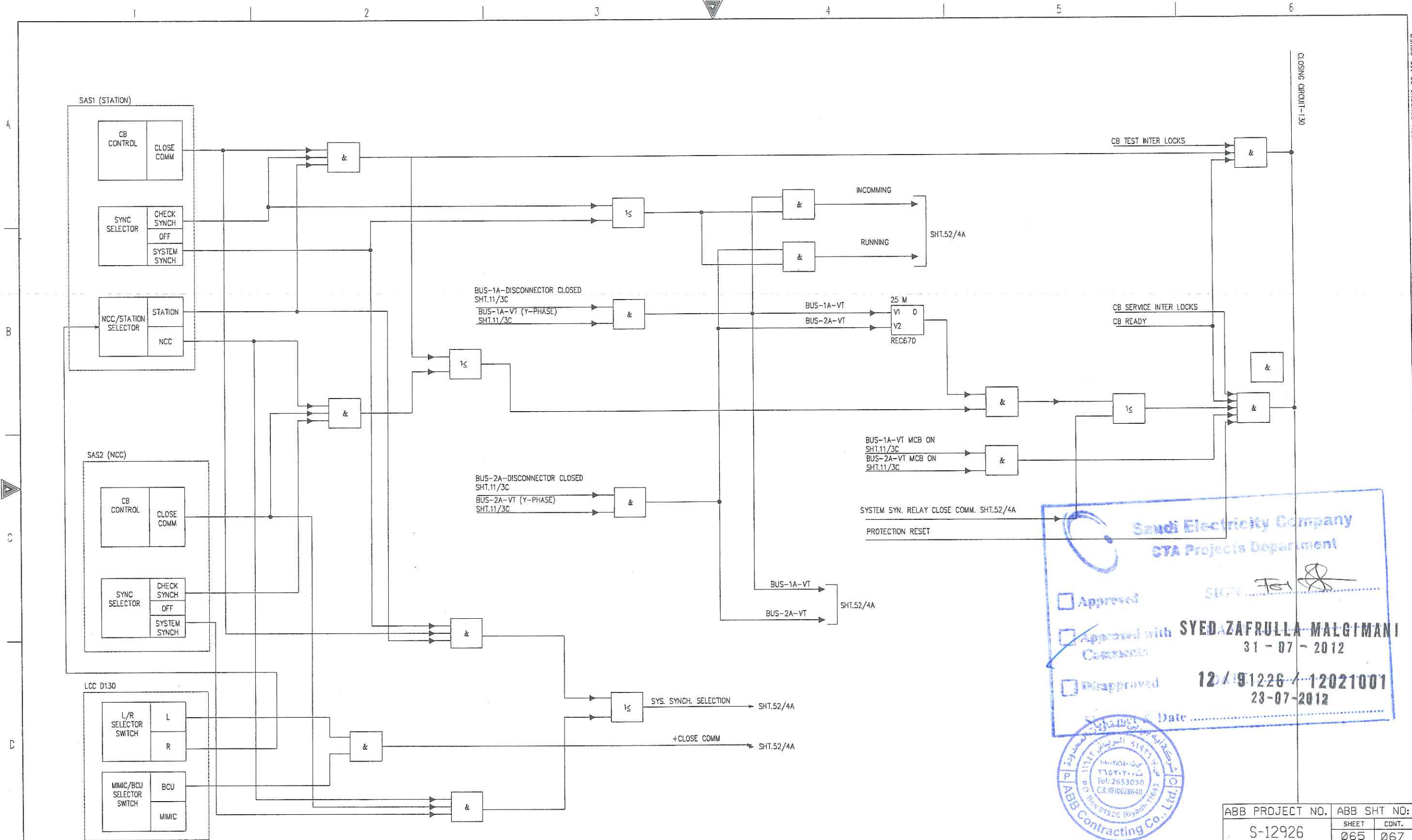


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07	12 21	RVD AS PER SEC REF LTR # 30502101	NS NK AK	06	12 21	RVD AS PER SEC REF LETTER # 91081	NS NK AK
06	12 21	RVD AS PER SEC REF LETTER # 91081	NS NK AK	05	12 16	RVD AS PER SEC REF LETTER # 90994	NS NK AK
REV. NO.	DATE	DESCRIPTION	CHKD. CERT. APPD.	OPRG. DEPT. <u>CTPD</u>	ENG. DEPT. <u>AUT-PSNM</u>		

ISOLATOR SELECTION	
PROTECTION LOGIC SINGLE LINE DIAGRAM	
S/S 9020	CONTRACT NO.11033009/00
RIYADH	SAUDI ARABIA

الشركة السعودية للكهرباء Saudi Electricity Company		JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
		N/A	P	C292	CD-176662	46 of 54
						REV. NO. 07

ABB PROJECT NO.	ABB SHT NO:
S-12926	SHEET 060J CONT. 061



Saudi Electricity Company
ETA Projects Department

Approved ☐ Approved with ☒ Disapproved ☐


SYED AZAFRULLA MALGIMANI
31-07-2012

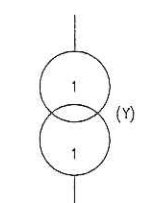
12/91226-12021001
23-07-2012

Date

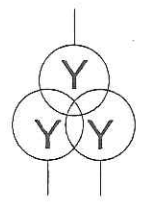
ABB Contracting Co., Ltd.

ABB PROJECT NO. S-12926 ABB SHT NO: 065 067

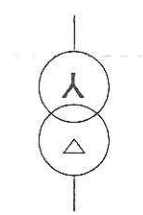
AS-BUILT BY _____ DATE _____						BUS COUPLER-1 CLOSING LOGIC		<div> الشركة السعودية للكهرباء Saudi Electricity Company</div>		SHEET NO. 48 of 54				
07	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	DRAWN BY <u>TSR</u> CHECKED BY <u>NSR</u>				PROTECTION LOGIC SINGLE LINE DIAGRAM				
06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED <u>06/10/2010</u> DATE COMP _____		S/S 9020 CONTRACT NO.11033009/00		JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSNM</u>		RIYADH SAUDI ARABIA		N/A	P	C292	CD- 176662	07
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.					SEC-D (2004/10)				
										DMS		VECTOR		SEC00



1 PH VOLTAGE TRANSFORMER
(Y - PHASE)



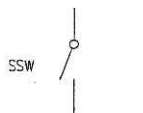
THREE PHASE VOLTAGE TRANSFORMER.



THREE PHASE INTERPOSING CURRENT
TRANSFORMER.



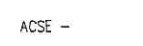
INDICATING LAMP



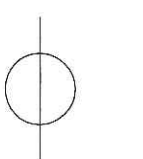
SELECTOR SWITCH



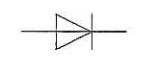
MCB



AUTOMATIC CHANGEOVER SWITCH EQPT.



CURRENT TRANSFORMER



DIODE - ONE WAY ROUTE



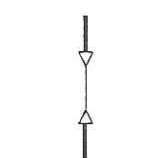
CIRCUIT BREAKER



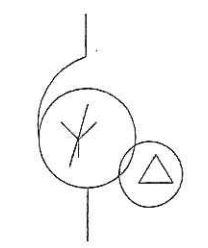
ISOLATOR OR EARTHING SWITCH
CIRCUIT BREAKER



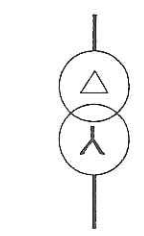
ISOLATOR OR EARTHING SWITCH
CABLE SEALING END



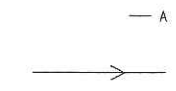
CABLE SEALING END



AUTO TRANSFORMER



STATION AUXILIARY TRANSFORMER



ALARM IN CONTROL PANEL
NORMAL DIRECTION OF SIGNAL
FLOW UNLESS OTHERWISE NOTED

Saudi Electricity Company
CYA Projects Department

☐ Approved
☒ Approved with Comments
☐ Disapproved

SIGN:
SYED ZAFRULLA MALGIMANI
31-07-2012

12/91226 / 12021001
23-07-2012

SEC Rel & Date



ABB PROJECT NO.	ABB SHT NO:
S-12926	SHEET 081 CONT. 082

REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.	OPRG. DEPT.	ENG. DEPT.
07	12-21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	CTPD	AUT-PSNM
06	12-21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK		
05	12-16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK		

132KV PROTECTION DEVICES NOMENCLATURES	
PROTECTION LOGIC SINGLE LINE DIAGRAM	
S/S 9020	CONTRACT NO.11033009/00
RIYADH	SAUDI ARABIA

الشركة السعودية للكهرباء Saudi Electricity Company				
JOB ORDER NO.	INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
N/A	P	C292	CD-176662	07

A	AMMETER	VARH	VARHOUR METER	27F	FUSE FAILURE RELAY
	CURRENT TRANSDUCER	WH	WATTHOUR METER	49T	TRANSFORMER WDG. TEMP. HIGH TRIP
	AMMETER / VOLTMETER SELECTOR SWITCH	&	'AND' LOGIC GATE	49W	TRANSFORMER WDG. TEMP. HIGH ALARM
BB.PR-1A IN OUT	BUSBAR PROTECTION - 1A IN/OUT	I<	'OR' LOGIC GATE	51/51N	IDMTL NON-DIRECTIONAL 2PH OVER CURRENT & EARTH FAULT RELAY.
DV	DUAL SCALE VOLTMETER	(0-1S) 2	TIME DELAY RELAY, 0-1S RANGE.	50/50N 51/51N	IDMTL NON DIRECTIONAL 3PHASE OVERCURRENT & EARTH FAULT RELAY
DF	DUAL SCALE FREQUENCY METER	21 	DISTANCE PROTECTION RELAY	51NDT	DEFINITE TIME EARTHFALT RELAY
BT	BACK TRIP LINK	23	TRANSFORMER COOLER FAIL	51NA	TRANSFORMER NEUTRAL CURRENT E/F ALARM RELAY.
FUSE	FUSE	25(A) V1 0 V2	SYNCHRO CHECK RELAY WITH VOLTAGE CHECK UNIT. (FOR AUTO RECLOSE)	51S/51NS	TRANSFORMER L.V. O/C & E/F RELAY.
FR	FAULT RECORDER	25(M) V1 0 V2	SYNCHRO CHECK RELAY WITH VOLTAGE CHECK UNIT. (FOR MANUAL SYNCHRONISATION)	50+62CBF-1, 50+62CBF-2	CIRCUIT BREAKER FAIL RELAY-1/2
9/5A	REFERENCE, SHEET-9, LOCATION-5A	26D-1	MAIN TRANSFORMER OIL TEMP. HIGH (STAGE 1)	50P/51P	TRANSFORMER H.V. O/C INST/IDMT
MDI	MAXIMUM DEMAND AMMETER	26D-2	MAIN TRANSFORMER OIL TEMP. HIGH (STAGE 2)	51N	TRANSFORMER STAND BY EARTH FAULT RELAY.
MVAR	MEGA VAR METER	26S	TRANSFORMER FIRE PROTECTION OPERATED (SERGI)	50/51/50N/51NT	3 PH O/C & E/F RELAY (IDMTL & INSTANTANEOUS)
MVAR	MEGA VAR TRANSDUCER	27B	BUS UNDER-VOLTAGE RELAY	50/51ET	INSTANTANEOUS CURRENT CHECK RELAY EARTHING TRANSFORMER
MW	MEGA WATTMETER	27TC-1	TRIP COIL - 1 SUPERVISION RELAY.		
MW	MEGA WATT TRANSDUCER	27TC-2	TRIP COIL - 2 SUPERVISION RELAY.		
S	SYNCHROSCOPE	27L	LINE UNDER VOLTAGE RELAY		
SY	FEEDER SELECTOR SWITCH FOR MANUAL SYNCHRONISING				
V	VOLTMETER				
V	VOLTAGE TRANSDUCER				

Saudi Electricity Company
CTA Projects Department

Approved ☐ SIGN


Approved with Comments ☒ **SYED ZAFRULLA MALGIMANI**
31-07-2012

Disapproved ☐ 12/09/2012 / 12021001
23-07-2012

St.C Ref & Date




ABB PROJECT NO.	ABB SHT NO:
S-12926	SHEET 082 CONT. 083

AS-BUILT BY _____ DATE _____										132KV PROTECTION DEVICES NOMENCLATURES										 <div>الشركة السعودية للكهرباء Saudi Electricity Company</div>					SHEET NO. 52 of 54					
07	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	DRAWN BY <u>TSR</u> CHECKED BY <u>NSR</u>					PROTECTION LOGIC SINGLE LINE DIAGRAM														JOB ORDER NO.		INDEX		PLANT NO.	
06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	DATE STARTED <u>06/10/2010</u> DATE COMP _____					S/S <u>9020</u> CONTRACT NO. <u>110333009/00</u>										N/A		P		C292		CD- 176662		07	
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	OPRG. DEPT. <u>CTPD</u> ENG. DEPT. <u>AUT-PSNM</u>					RIYADH SAUDI ARABIA																			
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.																									

SN.	NOMENCLATURE	PROTECTIVE FUNCTION	RELAY TYPE	MAKE
1	87L	LINE DIFFERENTIAL RELAY MAIN PROTECTION-1	RED670	ABB
2	21/67N	DISTANCE AND NON DIRECTIONAL O/C & E/F RELAY	7SA522	SIEMENS
3	50BF+62BF-1(BC+BS+SHR+SGT)	CIRCUIT BREAKER FAILURE	REF615	ABB
4	50BF+62BF-2(BS+BC+SGT+SHR)	CIRCUIT BREAKER FAILURE	P141	AREVA
5	25 - SYSTEM SYNC	SYNCHROCHECK RELAY	SYNCHRO TACT 5201	ABB
6	27 TC1	TRIP COIL SUPERVISION	SPER1C1	ABB
7	27 TC2	TRIP COIL SUPERVISION	MVAX 31	AREVA
8	50BF+62BF-1(SPARE BAYS)	CIRCUIT BREAKER FAILURE	REF615	ABB
9	50BF+62BF-2(SPARE BAYS)	CIRCUIT BREAKER FAILURE	P141	AREVA
10	87C1/95C1,87R/95R	TEE PROTECTION MAIN-1	REC670	ABB
11	87C2,87C	TEE PROTECTION MAIN-2	P141	AREVA
12	59	VOLTAGE RELAY	REF615	ABB
13	62	TIME DELAY RELAY	RXKL1	ABB
14	95 (SGT,SHR)	CT SUPERVISION RELAY	RAEDK3	ABB
15	50P/51P	TRANSFORMER HV O/C PROTECTION RELAY	REF615	ABB
16	51NA	TERTIARY BACK UP E/F PROT.	REF615	ABB
17	87T1	TRANSFORMER DIFFL RELAY MAIN PROTECTION-1	RET670	ABB
18	85R	INTERTRIP RECEIVE	MVAJ101	ABB
19	86	TRIP UNIT	MVAJ105	AREVA
20	87B/95B(BB-1,BB-1B,BB-2A,BB-2B &CH2)	HIGH IMPEDANCE BUSBAR RELAY	REC670	ABB
21	87T2	TRANSFORMER DIFFL RELAY MAIN PROTECTION-2	P-633	AREVA
22	74 7 FLAG RELAYS (GT)	DC SUPERVISION RELAY	RXSF1	ABB
23	AUX RELAY		RXMB1	ABB
24	HIGH SPEED TRIP RELAY (GT)		RXMS1	ABB

Saudi Electricity Company
CTA Projects Department

Approved ☒ Approved with Comments ☒ Disapproved ☐

SIGN 

SYED ZAFARULLA M. AL-GHAMDI
31-07-2012

12/09/2012 12:26 / 1202100
23-07-2012

SEC-101 & Date



ABB PROJECT NO.	ABB SHT NO:
S-12926	SHEET 084 CONT. NIL

AS-BUILT BY _____ DATE _____				132KV PROTECTION DEVICES NOMENCLATURES		الشركة السعودية للكهرباء Saudi Electricity Company				SHEET NO. 54 of 54			
07	12 21	RVD AS PER SEC REF LTR # 30502101	NS	NK	AK	PROTECTION LOGIC SINGLE LINE DIAGRAM		JOB ORDER NO.		INDEX	PLANT NO.	DRAWING NUMBER	REV. NO.
06	12 21	RVD AS PER SEC REF LETTER # 91081	NS	NK	AK	S/S 9020 CONTRACT NO.11033009/00		N/A		P	C292	CD-176662	07
05	12 16	RVD AS PER SEC REF LETTER # 90994	NS	NK	AK	RIYADH SAUDI ARABIA							
REV. NO.	DATE	DESCRIPTION	CHKD.	CERT.	APPD.	DPRG. DEPT. CTPD ENG. DEPT. AUT-PSNM							